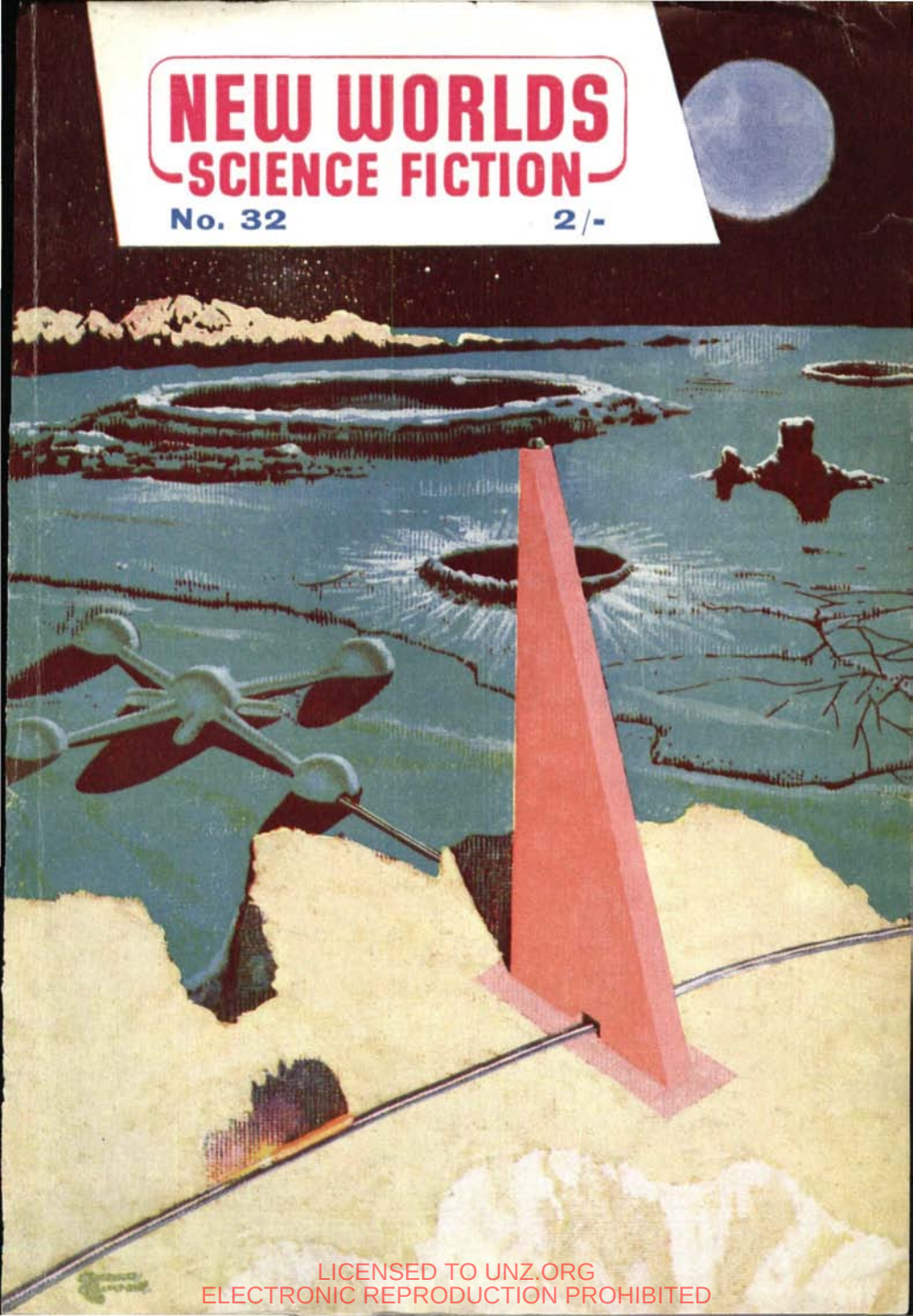
NEW WORLDS
SCIENCE FICTION

No. 32 2/-



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Sydney J. Bounds

Born in 1920 and educated at Brighton, Sussex, Sydney James Bounds has been closely connected with science fiction since his youth. As early as 1937 he was one of a small London group of amateurs which included Arthur Clarke and William F. Temple who wrote purely for pleasure. At the same time he studied electrical engineering at Kingston-on-Thames Technical College.

During the 1939-45 war he served with the R.A.F. ground staff as electrician and instrument repairer and afterwards as sub-station assistant on London Transport's Underground system, but forsook this in 1951 to become a professional writer.

While his literary ventures have covered a widely divergent field, including juvenile, confession, gangster and western, he prefers science fiction and has learned (the hard way) to adapt himself and his stories to the requirements of editors who are often quite 'difficult.'

Still unmarried he prefers to smoke a pipe and paint pictures for relaxation—and prefers art to be spelt with a small 'a.' His latest work, a science fiction novel, *The Moon Raiders*, will be published this year by W. Foulsham and Co.

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'SURVEY' — PRELIMINARY REPORT

At the time of going to press with this issue it is still too early to give a final analysis on the *Survey* we conducted in No. 30. In fact, every post is bringing in more replies, although the avalanche from our British readers has by now dropped to a trickle while the early returns from our overseas readers are beginning to increase.

I have been very gratified by the excellent response to our experiment—hundreds of replies were received in the first week and by now the total is getting near the first thousand—but it will necessarily take a lot of work to break down statistically all the answers and present them in an easily readable form. Naturally, I am disappointed that the returns are not 100 per cent., an impossibility in any form of mail ballot (even when free samples are offered !)—the expected number of replies irrespective of the nature of the product in all forms of advertising is estimated to be 2 per cent. So far, we have received about 5 per cent replies, which is higher than expected.

Naturally, I would like to see that 5 per cent doubled before finalising the questionnaire and I am prepared to leave the closing date open for another month or so. Probably the majority of readers have intended sending in their replies but haven't got round to it yet—like most human endeavours it is a thing which has to be done at once or gets indefinitely put off through lack of time. Latecomers sending in their reports have usually apologised saying " I intended getting this off sooner."

For your assistance another *Survey* Form is included on Page 128.

It still isn't too late if you haven't replied.

Meanwhile, some extremely interesting statistics are building up from the replies already received, which will be of inestimable value both to myself and to potential and regular advertisers. As I mentioned last month it would appear that our average reading age is about thirty years. There is a fair percentage of technicians in the reading audience; many readers appear to have received advanced educations up to and including College—the proportion of Degrees earned being a fair percentage against the varying educational backgrounds. Hobbies provide a wide and interesting background; salary brackets are falling into a clearly defined average; a high percentage of people belong to libraries (in the region of 90 per cent of the replies), and our Book Review section claims a degree of priority in the Features section.

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Other surprises so far, are that the articles are well-liked and (not requested in the *Survey* itself) the Editorials!

So far 42 per cent of replies have also included letters from readers, covering almost every aspect of science fiction and *New Worlds* in particular. I would like to express my thanks to all those readers who took the additional trouble of writing such interesting and often long letters, and to assure them that both criticisms and suggestions have all been noted and will be considered. It is not possible to reply individually to more than a few so I hope that those who have not received a reply will fully understand why.

1954 INTERNATIONAL FANTASY AWARD

Readers will be interested in knowing that on December 9th last Theodore Sturgeon was presented with the I.F.A. Trophy he won for his outstanding novel *More Than Human*. The presentation took place at the Brooklyn Public Library during their Book Week Festival and was made by Ian Ballantine, editor-in-chief of Ballantine Books, New York, taking over at short notice from Nova's Chairman John Copeman who had to sail earlier than expected after a ten-week business trip through Canada and the U.S.A. Following the presentation interesting speeches centred upon science fiction were made by Theodore Sturgeon and prominent authors Henry Kuttner and Frederik Pohl.

SCIENCE FICTION LUNCHEON CLUB

Leading London publishers interested in the development of science fiction in hard covers have formed their own Luncheon Club which meets every other month at the Criterion Restaurant, Piccadilly, to which prominent critics, reviewers and reporters are regularly invited. Formed primarily as a meeting place to exchange ideas and produce selected publicity for the Press, the Club has had a number of well-known personalities as Guests of Honour. Recent speakers have been Miss Clemence Dane, the author, Alan Pryce-Jones, editor of *The Times Literary Supplement*, and Professor A. M. Low.

The last meeting was graced by actress Patricia Laffan, who had the lead part in the science fiction film "Devil Girl from Mars," (but prefers to be remembered for her role as Poppeia, Nero's wife, in "Quo Vadis.") Miss Laffan gave a most amusing talk about her experiences in making "Devil Girl" and displayed some interesting (if highly improbable) 'props' used in the making of the film.

John Carnell

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Every once in a long long while a genius is born who perforce must struggle against an environment of poverty and through sheer pertinacity arrive at the top. In 1887 it was Ramanujan. Tomorrow—it could be Gomez. But the pressure of modern politics may only wish to use a new form of mathematics for its own ends.

GOMEZ

By C. M. Kornbluth

Illustrated by QUINN

Now that I'm a cranky, constipated old man I can afford to say that the younger generation of scientists makes me sick to my stomach. Short order fry-cooks of destruction, they hear through the little window the dim order: "Atom bomb rare, with cobalt 60!" and sing it back and rattle their stinking skillets and sling the deadly hash—just what the customer ordered, with never a notion invading their smug, too-heated havens that there's a small matter of right and wrong that takes precedence even over their haute cuisine.

There used to be a slew of them who yelled to high heaven about it. Weiner, Urey, Szilard, Morrison—dead now, and worse. Unfashionable. The greatest of them you have never heard of. Admiral MacDonald never did clear the story. He was Julio Gomez, and his story was cleared yesterday by a fellow my Jewish friends call Malach Hamovis, the Hovering Angel of Death. A black-bordered letter from Rosa advised me that Malach Hamovis had come in on runway six with his flaps down and picked up Julio at the age of thirty-nine. Pneumonia.

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"But," Rosa painfully wrote, "Julio would want you to know he died not too unhappy, after a good though short life with much of satisfaction . . ."

I think it will give him some more satisfaction, wherever he is, to know that his story at last is getting told.

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It started twenty-two years ago with a routine assignment on a crisp October morning. I had an appointment with Dr. Sugarman, the head of the physics department at the University. It was the umpth anniversary of something or other—first atomic pile, the test A-bomb, Nagasaki—I don't remember what, and the Sunday editor was putting together a page on it. My job was to interview the three or four University people who were Manhattan District grads.

I found Sugarman in his office at the top of the modest physics building's square gothic tower, brooding through a pointed-arch window at the bright autumn sky. He was a tubby, jowly little fellow. I'd been seeing him around for a couple of years at testimonial banquets and press conferences, but I didn't expect him to remember me. He did, though, and even got the name right.

" Mr. Vilchek ?" he beamed. " From the *Tribune* ?"

" That's right, Dr. Sugarman. How are you ?"

" Fine ; fine. Sit down, please. Well, what shall we talk about ?"

" Well, Dr. Sugarman, I'd like to have your ideas on the really fundamental issues of atomic energy, A-bomb control and so on. What in your opinion is the single most important factor in these problems?"

His eyes twinkled; he was going to surprise me. " Education !" he said, and leaned back waiting for me to register shock.

I registered. " That's certainly a different approach, doctor. How do you mean that, exactly ?"

He said impressively: " Education—*technical* education—is the key to the underlying issues of our time. I am deeply concerned over the unawareness of the general public to the meaning and accomplishments of science. People underrate me—underrate *science*, that is—because they do not *understand* science. Let me show you something." He rummaged for a moment through papers on his desk and handed me a sheet of lined tablet paper covered with chicken-track handwriting. " A letter I got," he said. I squinted at the pencilled scrawl and read :

October 12.

Esteemed Sir :

Beg to introduce self to you the atomic Scientist as a youth 17 *working with diligence to perfect self in Mathematical Physics. The knowledge of English is imperfect since am in New-York* 1 *year only from Puerto Rico and due to Father and Mother poverty must wash the dishes in the restaurant. So esteemed sir excuse imperfect English which will better.*

I hesitate intruding your valuable Scientist time but hope you sometime spare minutes for diligents such as I. My difficulty is with

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neutron cross-section absorption of boron steel in Reactor which theory I am working out. Breeder reactors demand

$$u = \frac{X}{1} + \frac{X^{5}}{1} + \frac{X^{10}}{1} + \frac{X^{15}}{1} + \ldots$$

for boron steel, compared with neutron cross-section absorption of

$$v = \frac{X^{\frac{1}{5}}}{1} + \frac{X}{1} + \frac{X^{2}}{1} + \frac{X^{3}}{1} + \ldots$$

for any Concrete with which I familiarize myself. Whence arises relationship

$$v^{5} = u\,\frac{1 - 2u + 4u^{2} - 3u^{3} + u^{4}}{1 + 3u + 4u^{2} + 2u^{3} + u^{4}}$$

indicating only a fourfold breeder gain. Intuitively I dissatisfy with this gain and beg to intrude your time to ask wherein I neglect. With the most sincere thanks.

J. Gomez
c/o Porto Bello Lunchroom
124th St. & St. Nicholas Ave.
New-York, New-York

I laughed and told Dr. Sugarman appreciatively: "That's a good one. I wish our cranks kept in touch with us by mail, but they don't. In the newspaper business they come in and demand to see the editor. Could I use it, by the way? The readers ought to get a boot out of it."

He hesitated and said: "All right—if you don't use my name. Just say 'a prominent physicist.' I didn't think it was too funny myself though, but I see your point, of course. The boy may be feeble-minded—and he probably is—but he believes, like too many people, that science is just a bag of tricks which any ordinary person can acquire—"

And so on and so on.

I went back to the office and wrote the interview in twenty minutes. It took me longer than that to talk the Sunday editor into running the Gomez letter in a box on the atom-anniversary page, but he finally saw it my way. I had to retype it. If I'd just sent the letter down to the composing room as was, we would have had a strike on our hands.

On Sunday morning, at a quarter past six, I woke up to the tune of fists thundering on my hotel-room door. I found my slippers and bathrobe and lurched blearily across the room. They didn't wait for me to unlatch. The door opened. I saw one of the hotel clerks, the

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Sunday editor, a frosty-faced old man and three hard-faced, hard-eyed young men. The hotel clerk mumbled and retreated and the others moved in. " Chief," I asked the Sunday editor hazily, " what's going—? "

A hard-faced young man was standing with his back to the door; another was standing with his back to the window and the third was blocking the bathroom door. The icy old man interrupted me with a crisp authoritative question snapped at the editor. " You identify this man as Vilchek ?"

The editor nodded.

" Search him," snapped the old man. The fellow standing guard at the window slipped up and frisked me for weapons while I sputtered incoherently and the Sunday editor avoided my eye.

When the search was over the frosty-faced old boy said to me: " I am Rear Admiral MacDonald, Mr. Vilchek. I'm here in my capacity as deputy director of the Office of Security and Intelligence, U.S. Atomic Energy Commission. Did you write this ?" He thrust a newspaper clipping at my face.

I read, blearily :

WHAT'S SO TOUGH ABOUT A-SCIENCE ?
TEENAGE POT-WASHER DOESN'T KNOW

A letter received recently by a prominent local atomic scientist points up Dr. Sugarman's complaint (see adjoining column) that the public does not appreciate how hard a physicist works. The text, complete with " mathematics " follows :

Esteemed Sir :

Beg to introduce self to you the Atomic Scientist as youth 17 working——

" Yes," I told the admiral. " I wrote it, except for the headline. What about it ?"

He snapped: " The letter is purportedly from a New York youth seeking information, yet there is no address for him given. Why is that ?"

I said patiently: " I left it off when I copied it for the composing room. That's *Trib* style on readers' letters. *What* is all this about ?"

He ignored the question and asked: " Where is the purported original of the letter ?"

I thought hard and told him: " I think I stuck it in my trousers pocket. I'll get it—" I started for the chair with my suit draped over it.

" *Hold it, mister* !" said the young man at the bathroom door. I held it and he proceeded to go through the pockets of the suit. He found the Gomez letter in the inside breast pocket of the coat and

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passed it to the admiral. The old man compared it, word for word, with the clipping and then put them both in his pocket.

" I want to thank you for your co-operation," he said coldly to me and the Sunday editor. " I caution you not to discuss, and above all not to publish, any account of this incident. The national security is involved in the highest degree. Good day."

He and his boys started for the door, and the Sunday editor came to life. " Admiral," he said, " this is going to be on the front page of to-morrow's *Trib*."

The admiral went white. After a long pause he said: " You are aware that this country may be plunged into global war at any moment. That American boys are dying every day in border skirmishes. Is it to protect civilians like you who won't obey a reasonable request affecting security ?"

The Sunday editor took a seat on the edge of my rumpled bed and lit a cigarette. " I know all that, admiral," he said. " I also know that this is a free country and how to keep it that way. Pitiless light on incidents like this of illegal search and seizure."

The admiral said: " I personally assure you, on my honour as an officer, that you would be doing the country a grave disservice by publishing an account of this."

The Sunday editor said mildly: " Your honour as an officer ? You broke into this room without a search warrant. Don't you realize that's against the law ? And I saw your boy ready to shoot when Vilchek started for that chair." I began to sweat a little at that, but the admiral was sweating harder.

With an effort he said: " I should apologize for the abruptness and discourtesy with which I've treated you. I do apologize. My only excuse is that, as I've said, this is a crash-priority matter. May I have your assurance that you gentlemen will keep silent ?"

" On one condition," said the Sunday editor. " I want the *Trib* to have an exclusive on the Gomez story. I want Mr. Vilchek to cover it, with your full co-operation. In return, we'll hold it for your release and submit it to your security censorship."

" It's a deal," said the admiral, sourly. He seemed to realize suddenly that the Sunday editor had been figuring on such a deal all along.

On the plane for New York, the admiral filled me in. He was precise and unhappy, determined to make the best of a bad job. " I was awakened at three this morning by a phone call from the chairman of the Atomic Energy Commission. *He* had been awakened by a call from Dr. Monroe of the Scientific Advisory Committee. Dr. Monroe had been up late working and sent out for the Sunday *Tribune* to read

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before going to sleep. He saw the Gomez letter and went off like a 16-inch gun. The neutron cross-section absorption relationship expressed in it happens to be, Mr. Vilchek, his own work. It also happens to be one of the nation's most closely-guarded—er—atomic secrets. Presumably this Gomez stumbled on it somehow, as a janitor or something of the sort, and is feeding his ego by pretending to be an atomic scientist."

I scratched my unshaven jaw. "Admiral," I said, "you wouldn't kid me? How can three equations be a top atomic secret?"

The admiral hesitated. "All I can tell you," he said slowly, "is that breeder reactors are involved."

"But the letter said that. You mean this Gomez not only swiped the equations but knew what they were about?"

The admiral said grimly: "Somebody has been incredibly lax. It would be worth many divisions to the Asians for their man Kaptza to see those equations—and realize that they are valid."

He left me to chew that one over for a while as the plane droned over New Jersey. Finally the pilot called back: "E.T.A. five minutes, sir. We have landing priority at Newark."

"Good," said the admiral. "Signal for a civilian-type car to pick us up without loss of time."

"Civilian," I said.

"Of course civilian!" he snapped. "That's the hell of it. Above all we must not arouse suspicion that there is anything special or unusual about this Gomez or his letter. Copies of the *Tribune* are on their way to the Far East now as a matter of routine—they take all American papers and magazines they can get. If we tried to stop shipment of *Tribunes* that would be an immediate give-away that there was something of importance going on."

We landed and the five of us got into a late-model car, neither drab nor flashy. One of the admiral's young men relieved the driver, a corporal with Signal Corps insignia. There wasn't much talk during the drive from Newark to Spanish Harlem, New York. Just once the admiral lit a cigarette, but he flicked it through the window after a couple of nervous puffs.

The Porto Bello Lunchroom was a store-front restaurant in the middle of a shabby tenement block. Wide-eyed, graceful skinny little kids stared as our car parked in front of it and then converged on us purposefully. "Watch your car, mister?" they begged. The admiral surprised them—and me—with a flood of Spanish that sent the little extortionists scattering back to their stickball game in the street and their potsy layouts chalked on the sidewalks.

"Higgins," said the admiral, "see if there's a back exit." One of

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his boys got out and walked around the block under the dull, incurious eyes of black-shawled women sitting on their stoops. He was back in five minutes, shaking his head.

"Vilchek and I will go in," said the admiral. "Higgins, stand by the restaurant door and tackle anyone who comes flying out. Let's go, reporter. And remember that I do the talking."

The noon-hour crowd at the Porto Bello's ten tables looked up at us when we came in. The admiral said to a woman at a primitive cashier's table: "*Neuva York* Board of Health, *senora.*"

"Ah!" she muttered angrily. "*Por favor, no aqui!* In back, understand? Come." She beckoned a pretty waitress to take over at the cash drawer and led us into the steamy little kitchen. It was crowded with us, an old cook and a young dishwasher. The admiral and the woman began a rapid exchange in Spanish. He played his part well. I myself couldn't keep my eyes off the kid dishwasher who somehow or other had got hold of one of America's top atomic secrets.

Gomez was seventeen, but he looked fifteen. He was small-boned and lean, with skin the colour of bright Virginia tobacco in an English cigarette. His hair was straight and glossy-black and a little long. Every so often he wiped his hands on his apron and brushed it back from his damp forehead. He was working like hell, dipping and swabbing and rinsing and drying like a machine, but he didn't look pushed or angry. He wore a half-smile that I later found out was his normal, relaxed expression and his eyes were far away from the kitchen of the Porto Bello Lunchroom. The elderly cook was making it clear by the exaggerated violence of his gesture and a savage frown that he resented these people invading his territory. I don't think Gomez even knew we were there. A sudden, crazy idea came into my head.

The admiral had turned to him. "*Como se llama, chico?*"

He started and put down the dish he was wiping. "Julio Gomez, *senor. Por que, por favor? Que* pasa?"

He wasn't the least bit scared.

"*Nueva York* Board of Health," said the admiral. "*Con su permiso*" He took Gomez' hands in his and looked at them gravely, front and back, making *tsk-tsk* noises. Then, decisively: "*Vamanos, Julio. Siento mucho. Usted esta muy enfermo.*" Everybody started talking at once, the woman doubtless objecting to the slur on her restaurant and the cook to losing his dishwasher and Gomez to losing time from the job.

The admiral gave them broadside for broadside and outlasted them. In five minutes we were leading Gomez silently from the restaurant. "*La loteria!*" a woman customer said in a loud whisper. "*O las mutas,*" somebody said back. Arrested for policy or marihuana, they

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thought. The pretty waitress at the cashier's table looked stricken and said nervously: " Julio ?" as we passed, but he didn't notice.

Gomez sat in the car with the half-smile on his lips and his eyes a million miles away as we rolled downtown to Foley Square. The admiral didn't look as though he'd approve of any questions from me. We got out at the Federal Building and Gomez spoke at last. He said in surprise: " This, it is not the hospital !"

Nobody answered. We marched him up the steps and surrounded him in the elevator. It would have made anybody nervous—it would have made *me* nervous—to be herded like that; everybody's got something on his conscience. But the kid didn't even seem to notice. I decided that he must be a half-wit or—there came that crazy notion again.

The glass door said " U.S. Atomic Energy Commission, Office of Security and Intelligence." The people behind it were flabbergasted when the admiral and party walked in. He turned the head man out of his office and sat at his desk, with Gomez getting the caller's chair. The rest of us stationed ourselves uncomfortably around the room.

It started. The admiral produced the letter and asked in English: " Have you ever seen this before ?" He made it clear from the way he held it that Gomez wasn't going to get his hands on it.

" *Si, seguro.* I write it last week. This is funny business. I am not really sick like you say, no ?" He seemed relieved.

" No. Where did you get these equations ?"

Gomez said proudly: " I work them out."

The admiral gave a disgusted little laugh. " Don't waste my time, boy. Where did you get these equations ?"

Gomez was beginning to get upset. " You got no right to call me liar," he said. " I not so smart as the big physicists, *seguro*, and maybe I make mistakes. Maybe I waste the *profesor* Soohar-man his time but he got no right to have me arrest. I tell him right in letter he don't have to answer if he don't want. I make no crime and you got no right !"

The admiral looked bored. " Tell me how you worked the equations out," he said.

" Okay," said Gomez sulkily. " You know the random paths of neutron is expressed in matrix mechanics by *profesor* Oppenheim five years ago, all okay. I transform his equations from path-prediction domain to cross-section domain and integrate over absorption areas. This gives u series and v series. And from there, the u-v relationship is obvious, no ?"

The admiral, still bored, asked: " Got it ?"

I noticed that one of his young men had a shorthand pad out. He said: " Yes."

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The admiral picked up the phone and said: "This is MacDonald. Get me Dr. Mines out at Brookhaven right away." He told Gomez blandly: "Dr. Mines is the chief of the A.E.C. Theoretical Physics Division. I'm going to ask him what he thinks of the way you worked the equations out. He's going to tell me that you were just spouting a lot of gibberish. And then you're going to tell me where you *really* got them."

Gomez looked mixed up and the admiral turned back to the phone. "Dr. Mines? This is Admiral MacDonald of Security. I want your opinion on the following." He snapped his fingers impatiently and the stenographer passed him his pad. "Somebody has told me that he discovered a certain relationship by taking—". He read carefully. "—by taking the random paths of a neutron expressed in matrix mechanics by Oppenheim, transforming his equations from the path-prediction domain to the cross-section domain and integrating over the absorption areas."

In the silence of the room I could hear the faint buzz of the voice on the other end. And a great red blush spread over the admiral's face from his brow to his neck. The faintly-buzzing voice ceased and after a long pause the admiral said slowly and softly: "No, it wasn't Fermi or Szilard. I'm not at liberty to tell you who. Can you come right down to the Federal Building Security Office in New York? I—I need your help. Crash priority." He hung up the phone wearily and muttered to himself: "Crash priority. Crash." And wandered out of the office looking dazed.

His young men stared at one another in frank astonishment. "Five years," said one, "and—"

"*Nix*," said another, looking pointedly at me.

Gomez asked brightly: "What goes on anyhow? This is damn funny business, I think."

"Relax, kid," I told him. "Looks as if you'll make out all—"

"*Nix*," said the nixer again savagely, and I shut up and waited.

After a while somebody came in with coffee and sandwiches and we ate them. After another while the admiral came in with Dr. Mines. Mines was a white-haired, wrinkled Connecticut Yankee. All I knew about him was that he'd been in mild trouble with Congress for stubbornly plugging world government and getting on some of the wrong letterheads. But I learned right away that he was all scientist and didn't have a phony bone in his body.

"Mr. Gomez?" he asked cheerfully. "The admiral tells me that you are either a well-trained foreign spy or a phenomenal self-taught nuclear physicist. He wants me to find out which."

"Foreign?" yelled Gomez, outraged. "He's crazy! I am American United States citizen!"

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" That's as may be," said Dr. Mines. " Now, the admiral tells me you describe the *u-v* relationship as ' obvious.' I should call it a highly abstruse derivation in the theory of continued fractions and complex multiplication."

Gomez strangled and gargled helplessly trying to talk, and finally asked, his eyes shining: " *Por favor*, could I have piece paper ?"

They got him a stack of paper and the party was on.

For two unbroken hours Gomez and Dr. Mines chattered and scribbled. Mines gradually shed his jacket, vest and tie, completely oblivious to the rest of us. Gomez was even more abstracted. He *didn't* shed his jacket, vest and tie. He didn't seem to be aware of anything except the rapid-fire exchange of ideas via scribbled formulae and the terse spoken jargon of mathematics. Dr. Mines shifted on his chair and sometimes his voice rose with excitement. Gomez didn't shift or wriggle or cross his legs. He just sat and scribbled and talked in a low, rapid monotone, looking straight at Dr. Mines with his eyes very wide-open and lit up like searchlights.

The rest of us just watched and wondered.

Dr. Mines broke at last. He stood up and said: " I can't take any more, Gomez. I've got to think it over—" He began to leave the room, mechanically scooping up his clothes, and then realized that we were still there.

" Well ?" asked the admiral grimly.

Dr. Mines smiled apologetically. " He's a physicist, all right," he said. Gomez sat up abruptly and looked astonished.

" Take him into the next office, Higgins," said the admiral. Gomez let himself be led away, like a sleepwalker.

Dr. Mines began to chuckle. " Security !" he said. " Security !"

The admiral rasped: " Don't trouble yourself over my decisions, if you please, Dr. Mines. My job is keeping the Asians from pirating American science and I'm doing it to the best of my ability. What I want from you is your opinion on the possibility of that young man having worked out the equations as he claimed."

Dr. Mines was abruptly sobered. " Yes," he said. " Unquestionably he did. And will you excuse my remark ? I was under some strain in trying to keep up with Gomez."

" Certainly," said the admiral, and managed a frosty smile. " Now if you'll be so good as to tell me how this completely impossible thing can have happened—?"

" It's happened before, admiral," said Dr. Mines. " I don't suppose you ever heard of Ramanujan ?"

" No."

" *Srinivasa* Ramanujan ?"

" *No* !"

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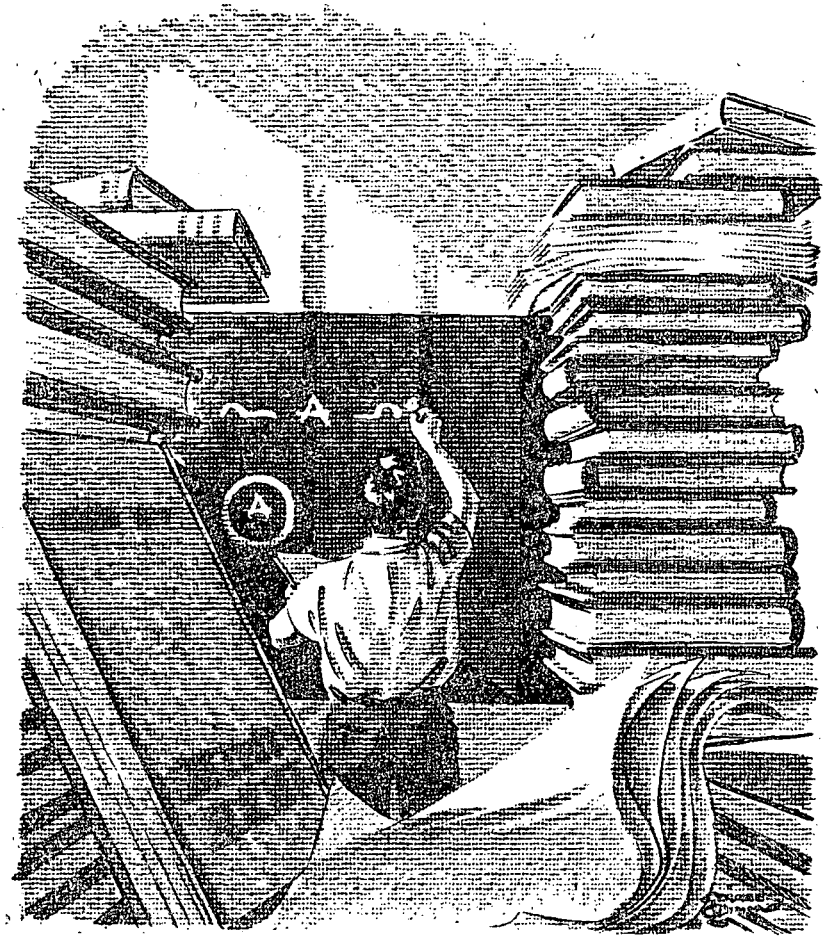

" Oh. Well, Ramanujan was born in 1887 and died in 1920. He was a poor Hindu who failed twice in college and then settled down as a government clerk. With only a single obsolete textbook to go on he made himself a very great mathematician. In 1913 he sent some of his original work to a Cambridge professor. He was immediately recognized and called to England where he was accepted as a first-rank

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man, became a member of the Royal Society, a Fellow of Trinity and so forth."

The admiral shook his head dazedly.

"It happens," Dr. Mines said. "Oh yes, it happens. Ramanujan had only one out-of-date book. But this is New York. Gomez has access to all the mathematics he could hope for and a great mass of unclassified and declassified nuclear data. And—genius. The way he puts things together . . . he seems to have only the vaguest notion of what a proof should be. He *sees* relationships as a whole. A most convenient faculty which I envy him. Where I have to take, say, a dozen painful steps from one conclusion to the next he achieves it in one grand flying leap. Ramanujan was like that too, by the way—very strong on intuition, weak on what we call 'rigor.'" Dr. Mines noted with a start that he was holding his tie, vest and coat in one hand and began to put them on. "Was there anything else?" he asked politely.

"One thing," said the admiral. "Would you say he's—he's a better physicist than you are?"

"Yes," said Dr. Mines. "Much better." And he left.

The admiral slumped, uncharacteristically, at the desk for a long time. Finally he said to the air: "Somebody get me the General Manager. No, the Chairman of the Commission." One of his boys grabbed the phone and got to work on the call.

"Admiral," I said, "where do we stand now?"

"Eh? Oh, it's you. The matter's out of my hands now since no security violation is involved. I consider Gomez to be in my custody and I shall turn him over to the Commission so that he may be put to the best use in the nation's interest."

"Like a machine?" I asked, disgusted.

He gave me both barrels of his ice-blue eyes. "Like a weapon," he said evenly.

He was right, of course. Didn't I know there was a cold war on? Of course I did. Who didn't? Taxes, housing shortage, everybody's kid brother sweating out the draft, prices sky-high at the supermarket. Uncomfortably I scratched my unshaved chin and walked to the window. Foley Square below was full of Sunday peace, with only a single girl stroller to be seen. She walked the length of the block across the street from the Federal Building and then turned and walked back. Her walk was dragging and hopeless and tragic.

Suddenly I knew her. She was the pretty little waitress from the Porto Bello; she must have hopped a cab and followed the men who were taking her Julio away. Might as well beat it, sister, I told her silently. Julio isn't just a good-looking kid any more; he's a military asset. The Security Office is turning him over to the policy-level boys

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for disposal. When that happens you might as well give up and go home.

It was as if she'd heard me. Holding a silly little handkerchief to her face she turned and ran blindly for the subway entrance at the end of the block and disappeared into it.

At that moment the telephone rang.

" MacDonald here," said the admiral. " I'm ready to report on the Gomez affair, Mr. Commissioner."

Gomez was a minor, so his parents signed a contract for him. The job-description on the contract doesn't matter, but he got a pretty good salary by government standards and a per-diem allowance too.

I signed a contract, too—" Information Specialist." I was partly companion, partly historian and partly a guy they'd rather have their eyes on than not. When somebody tried to cut me out on grounds of economy, Admiral MacDonald frostily reminded him that he had given his word. I stayed, for all the good it did me.

We didn't have any name. We weren't Operation Anything or Project Whoozis or Task Force Dinwiddie. We were just five people in a big fifteen-room house on the outskirts of Milford, New Jersey. There was Gomez, alone on the top floor with a lot of books, technical magazines and blackboards and a weekly visit from Dr. Mines. There were the three Security men, Higgins, Dalhousie and Leitzer, sleeping by turns and prowling the grounds. And there was me.

From briefing sessions with Dr. Mines I kept a diary of what went on. Don't think from that that I knew what the score was. War correspondents have told me of the frustrating life they led at some close-mouthed commands. Soandso-many air sorties, the largest number since January fifteenth. Casualties a full fifteen per cent lighter than expected. Determined advance in an active sector against relatively strong enemy opposition. And so on—all adding up to nothing in the way of real information.

That's what it was like in my diary because that's all they told me. Here are some excerpts: " On the recommendation of Dr. Mines, Mr. Gomez today began work on a phase of reactor design theory to be implemented at Brookhaven National Laboratory. The work involves the setting-up of thirty-five pairs of partial differential equations . . . Mr. Gomez announced tentatively today that in checking certain theoretical work in progress at the Los Alamos Laboratory of the A.E.C. he discovered a fallacious assumption concerning neutron-spin which invalidates the conclusions reached. This will be communicated to the Laboratory . . . Dr. Mines said today that Mr. Gomez has successfully invoked a hitherto-unexploited aspect of Minkowski's tensor

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analysis to crack a stubborn obstacle towards the control of thermo-nuclear reactions . . ."

I protested at one of the briefing sessions with Dr. Mines against this gobbledegook. He didn't mind my protesting. He leaned back in his chair and said calmly: "Vilchek, with all friendliness I assure you that you're getting everything you can understand. Anything more complex than the vague description of what's going on would be over your head. And anything more specific would give away exact engineering information which would be of use to foreign countries."

"This isn't the way they treated Bill Lawrence when he covered the atomic bomb," I said bitterly.

Mines nodded, with a pleased smile. "That's it exactly," he said. "Broad principles were being developed then—interesting things that could be told without any great harm being done. If you tell somebody that a critical mass of U-235 or Plutonium goes off with a big bang, you really haven't given away a great deal. He still has millions of man-hours of engineering before him to figure out how much is critical mass, to take only one small point."

So I took his word for it, faithfully copied the communiques he gave me and wrote what I could on the human-interest side for release some day.

So I recorded Gomez' progress with English, his taste for chicken pot pie and rice pudding, his habit of doing his own housework on the top floor and his old-maidish neatness. "You live your first fifteen years in a tin shack, Beel," he told me once, "and you find out you like things nice and clean." I've seen Dr. Mines follow Gomez through the top floor as the boy swept and dusted, talking at him in their mathematical jargon.

Gomez worked in forty-eight hour spells usually, and not eating much. Then for a couple of days he'd live like a human being grabbing naps, playing catch on the lawn with one or another of the Security people, talking with me about his childhood in Puerto Rico and his youth in New York. He taught me a little Spanish and asked me to catch him up on bad mistakes in English.

"But don't you ever want to get out of here?" I demanded one day.

He grinned: "Why should I, Beel? Here I eat good, I can send money to the parents. Best, I find out what the big professors are up to without I have to wait five-ten years for damn de-classifying."

"Don't you have a girl?"

He was embarrassed and changed the subject back to the big professors.

Dr. Mines drove up then, with his chauffeur who looked like a G-man and almost certainly was. As usual, the physicist was toting a

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bulging briefcase. After a few polite words with me, he and Julio went indoors and upstairs.

They were closeted for five hours—a record. When Dr. Mines came down I expected the usual briefing session. But he begged off. "Nothing serious," he said. "We just sat down and kicked some ideas of his around. I told him to go ahead. We've been—ah—using him very much like a sort of computer, you know. Turning him loose on the problems that were too tough for me and some of the other men. He's got the itch for research now. It would be very interesting if his forte turned out to be creative."

I agreed.

Julio didn't come down for dinner. I woke up in darkness that night when there was a loud bump overhead, and went upstairs in my pyjamas.

Gomez was sprawled, fully dressed, on the floor. He'd tripped over a footstool. And he didn't seem to have noticed. His lips were moving and he stared straight at me without knowing I was there.

"You all right, Julio?" I asked, and started to help him to his feet.

He got up mechanically and said: "—real values of the zeta function vanish."

"How's that?"

He saw me then and asked, puzzled: "How you got in here, Beel? Is dinnertime?"

"Is four A.M., *por dios*. Don't you think you ought to get some sleep?" He looked terrible.

No; he didn't think he ought to get some sleep. He had some work to do. I went downstairs and heard him pacing overhead for an hour until I dozed off.

This splurge of work didn't wear off in forty-eight hours. For a week I brought him meals and sometimes he ate absently, with one hand, as he scribbled on a yellow pad. Sometimes I'd bring him lunch to find his breakfast untouched. He didn't have much beard, but he let it grow for a week—too busy to shave, too busy to talk, to busy to eat, sleeping in chairs when fatigue caught up with him.

I asked Leitzer, badly worried, if we should do anything about it. He had a direct scrambler-phone connection with the New York Security and Intelligence office, but his orders didn't cover anything like a self-induced nervous breakdown of the man he was guarding.

I thought Dr. Mines would do something when he came—call in an M.D., or tell Gomez to take it easy, or take some of the load off by parcelling out whatever he had by the tail.

But he didn't. He went upstairs, came down two hours later and

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absently tried to walk past me. I headed him off into my room. "What's the word?" I demanded.

He looked me in the eye and said defiantly: "He's doing fine. I don't want to stop him."

Dr. Mines was a good man. Dr. Mines was a humane man. And he wouldn't lift a finger to keep the boy from working himself into nervous prostration. Dr. Mines liked people well enough, but he reserved his love for theoretical physics. "How important can this thing be?"

He shrugged irritably. "It's just the way some scientists work," he said. "Newton was like that. So was Sir William Rowan Hamilton—"

"Hamilton-Schmamilton," I said. "What's the sense of it? *Why* doesn't he sleep or eat?"

Mines said: "*You* don't know what it's like."

"Of course," I said, getting good and sore. "I'm just a dumb newspaper man. Tell me, Mr. Bones, what is it like?"

There was a long pause, and he said mildly: "I'll try. That boy up there is using his brain. A great chess player can put on a blindfold and play a hundred opponents in a hundred games simultaneously, remembering all the positions of his pieces and theirs and keeping a hundred strategies clear in his mind. Well, that stunt simply isn't in the same league with what Julio's doing up there.

"He has in his head some millions of facts concerning theoretical physics. He's scanning them, picking out one here and there, fitting them into new relationships, checking and rejecting when he has to, fitting the new relationships together, turning them upside-down and inside-out to see what happens, comparing them with known doctrine, holding them in his memory while he repeats the whole process and compares—and all the while he has a goal firmly in mind against which he's measuring all these things." He seemed to be finished.

For a reporter, I felt strangely shy. "What's he driving at?" I asked.

"I think," he said slowly, "he's approaching a unified field theory."

Apparently that was supposed to explain everything. I let Dr. Mines know that it didn't.

He said thoughtfully: "I don't know whether I can get it over to a layman—no offense, Vilchek. Let's put it this way. You know how math comes in waves, and how it's followed by waves of applied science based on the math. There was a big wave of algebra in the middle ages—following it came navigation, gunnery, surveying and so on. Then the Renaissance and a wave of analysis—what you'd call calculus. That opened up steam power and how to use it, mechanical engineering,

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electricity. The wave of *modern* mathematics since say 1875 gave us atomic energy. That boy upstairs may be starting off the next big wave."

He got up and reached for his hat.

"Just a minute," I said. I was surprised that my voice was steady. "What comes next? Control of gravity? Control of personality? Sending people by radio?"

Dr. Mines wouldn't meet my eye. Suddenly he looked old and shrunken. "Don't worry about the boy," he said.

I let him go.

That evening I brought Gomez chicken pot pie and a non-alcoholic egg nog. He drank the egg nog, said "Hi, Beel," and continued to cover yellow sheets of paper.

I went downstairs and worried.

Abruptly it ended late the next afternoon. Gomez wandered into the big first-floor kitchen looking like a starved old rickshaw coolie. He pushed his lank hair back from his forehead, said: "Beel, what is to eat—" and pitched forward onto the linoleum. Leitzer came when I yelled, expertly took Gomez's pulse, rolled him onto a blanket and threw another one over him. "It's just a faint," he said. "Let's get him to bed."

"Aren't you going to call a doctor, man?"

"Doctor couldn't do anything we can't do," he said stolidly. "And I'm here to see that security isn't breached. Give me a hand."

We got him upstairs and put him to bed. He woke up and said something in Spanish, and then, apologetically: "Very sorry, fellows. I ought to take it easier."

"I'll get you some lunch," I said, and he grinned.

He ate it all, enjoying it heartily, and finally lay back gorged. "Well," he asked me, "what is new, Beel?"

"What *is* new. And you should tell me. You finish your work?"

"I got it in shape to finish. The hard part it is over." He rolled out of bed.

"Hey!" I said.

"I'm okay now," he grinned. "Don't write this down in your history, Beel. Everybody will think I act like a woman."

I followed him into his work room where he flopped into an easy chair, his eyes on a blackboard covered with figures. He wasn't grinning any more.

"Dr. Mines says you're up to something big," I said.

"*Si.* Big."

"Unified field theory, he says."

"That is it," Gomez said.

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"Is it good or bad?" I asked, licking my lips. "The application, I mean."

His boyish mouth set suddenly in a grim line. "That, it is not my business," he said. "I am American citizen of the United States." He stared at the blackboard and its maze of notes.

I looked at it too—*really* looked at it for once—and was surprised by what I saw. Mathematics, of course, I don't know. But I had soaked up a very little *about* mathematics. One of the things I had soaked up was that the expressions of higher mathematics tend to be complicated and elaborate, involving English, Greek and Hebrew letters, plain and fancy brackets and a great variety of special signs besides the plus and minus of the elementary school.

The things on the blackboard weren't like that at all. The board was covered with variations of a simple expression that consisted of five letters and two symbols: a right-handed pothook and a left-handed pothook.

"What do they mean?" I asked, pointing.

"Somethings I made up," he said nervously. "The word for that one is 'enfields.' The other one is 'is enfielded by.'"

"What's *that* mean?"

His luminous eyes were haunted. He didn't answer.

"It looks like simple stuff. I read somewhere that all the basic stuff is simple once it's been discovered."

"Yes," he said almost inaudibly. "It is simple, Beel. Too damn simple, I think. Better I carry it in my head, I think." He strode to the blackboard and erased it. Instinctively I half-rose to stop him. He gave me a grin that was somehow bitter and unlike him. "Don't worry," he said. "I don't forget it." He tapped his forehead. "I *can't* forget it." I hope I never see again on any face the look that was on his.

"Julio," I said, appalled. "Why don't you get out of here for a while? Why don't you run over to New York and see your folks and have some fun? They can't keep you here against your will."

"They told me I shouldn't—" he said uncertainly. And then he got tough. "You're damn right, Beel. Let's go in together. I get dressed up. Er—You tell Leitzer, hah?" He couldn't quite face up to the hard-boiled security man.

I told Leitzer, who hit the ceiling. But all it boiled down to was that he sincerely wished Gomez and I wouldn't leave. We weren't in the Army, we weren't in jail. I got hot at last and yelled back that we were damn well going out and he couldn't stop us. He called New York on his direct wire and apparently New York confirmed it, regretfully.

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We got on the 4:05 Jersey Central, with Higgins and Dalhousie tailing us at a respectful distance. Gomez didn't notice them and I didn't tell him. He was having too much fun. He had a shine put on his shoes at Penn Station and worried about the taxi fare as we rode up to Spanish Harlem.

His parents lived in a neat little three-room apartment. A lot of the furniture looked brand new, and I was pretty sure who had paid for it. The mother and father spoke only Spanish, and mumbled shyly when "*mi amigo Beel*" was introduced. I had a very halting conversation with the father while the mother and Gomez rattled away happily and she poked his ribs to point up the age old complaint of any mother anywhere that he wasn't eating enough.

The father, of course, thought the boy was a janitor or something in the Pentagon and, as near as I could make out, he was worried about his Julio being grabbed off by a man-hungry government girl. I kept reassuring him that his Julio was a good boy, a very good boy, and he seemed to get some comfort out of it.

There was a little spat when his mother started to set the table. Gomez said reluctantly that we couldn't stay, that we were eating somewhere else. His mother finally dragged from him the admission that we were going to the Porto Bello so he could see Rosa, and everything was smiles again. The father told me that Rosa was a good girl, a very good girl.

Walking down the three flights of stairs with yelling little kids playing tag around us, Gomez asked proudly: "You not think they in America only a little time, hey?"

I yanked him around by the elbow as we went down the brownstone stoop into the street. Otherwise he would have seen our shadows for sure. I didn't want to spoil his fun.

The Porto Bello was full, and the pretty little girl was on duty as cashier at the table. Gomez got a last-minute attack of cold feet at the sight of her. "No table," he said. "We better go someplace else."

I practically dragged him in. "We'll get a table in a minute," I said.

"Julio," said the girl, when she saw him.

He looked sheepish. "Hello, Rosa. I'm back for a while."

"I'm glad to see you again," she said tremulously.

"I'm glad to see you again too—" I nudged him. "Rosa, this is my good friend Beel. We work together in Washington."

"Pleased to meet you, Rosa. Can you have dinner with us? I'll bet you and Julio have a lot to talk over."

"Well, I'll see . . . look, there's a table for you. I'll see if I can get away."

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We sat down and she flagged down the proprietress and got away in a hurry.

All three of us had *arroz con pollo*—rice with chicken and lots of other things. Their shyness wore off and I was dealt out of the conversation, but I didn't mind. They were a nice young couple. I liked the way they smiled at each other, and the things they remembered happily—movies, walks, talks. It made me feel like a benevolent uncle with one foot in the grave. It made me forget for a while the look on Gomez' face when he turned from the blackboard he had covered with too-simple math.

Over dessert I broke in. By then they were unselfconsciously holding hands. "Look," I said, "why don't you two go on and do the town? Julio, I'll be at the Madison Park Hotel." I scribbled the address and gave it to him. "And I'll get a room for you. Have fun and reel in any time." I rapped his knee. He looked down and I slipped him four twenties. I didn't know whether he had money on him or not, but anything extra the boy could use he had coming to him.

"Swell," he said. "Thanks." And looked shame-faced while I looked paternal.

I had been watching a young man who was moodily eating alone in a corner, reading a paper. He was about Julio's height and build and he wore a sports jacket much like Julio's. And the street was pretty dark outside.

The young man got up moodily and headed for the cashier's table. "Gotta go," I said. "Have fun."

I went out of the restaurant right behind the young man and walked as close behind him as I dared, hoping we were being followed.

After a block and a half of this, he turned on me and snarled: "Wadda you, mister? A wolf? Beat it!"

"Okay," I said mildly, and turned and walked the other way. Higgins and Dalhousie were standing there, flat-footed and open-mouthed. They sprinted back to the Porto Bello, and *I* followed *them*. But Julio and Rosa had already left.

"Tough, fellows," I said to them as they stood in the doorway. They looked as if they wanted to murder me. "He won't get into any trouble," I said. "He's just going out with his girl." Dalhousie made a strangled noise and told Higgins: "Cruise around the neighbourhood. See if you can pick them up. I'll follow Vilchek." He wouldn't talk to me. I shrugged and got a cab and went to the Madison Park Hotel, a pleasantly unfashionable old place with big rooms where I stay when business brings me to New York. They had a couple of adjoining singles; I took one in my own name and the other for Gomez.

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I wandered around the neighbourhood for a while and had a couple of beers in one of the ultra-Irish bars on Third Avenue. After a pleasant argument with a gent who thought the Russians didn't have any atomic bombs and faked their demonstrations and that we ought to blow up their industrial cities tomorrow at dawn, I went back to the hotel.

I didn't get to sleep easily. The citizen who didn't believe Russia could maul the United States pretty badly or at all had started me thinking again—all kinds of ugly thoughts. Dr. Mines who had turned into a shrunken old man at the mention of applying Gomez' work The look on the boy's face. My layman's knowledge that present-day "atomic energy" taps only the smallest fragment of the energy locked up in the atom. My layman's knowledge that once genius has broken a trail in science, mediocrity can follow the trail.

But I slept at last, for three hours.

At four-fifteen A.M. according to my watch the telephone rang long and hard. There was some switchboard and long-distance-operator mumbo-jumbo and then Julio's gleeful voice: "Beel! Congratulate us. We got marriage!"

"Married," I said fuzzily. "You got *married*, not marriage. How's that again!"

"We got *married*. Me and Rosa. We get on the train, the taxi driver takes us to justice of peace, we got *married*, we go to hotel here."

"Congratulations," I said, waking up. "Lots of congratulations. But you're under age, there's a waiting period—"

"Not in this state," he chuckled. "Here is no waiting periods and here I have twenty-one years if I say so."

"Well," I said. "Lots of congratulations, Julio. And tell Rosa she's got herself a good boy."

"Thanks, Beel," he said shyly. "I call you so you don't worry when I don't come in tonight. I think I come in with Rosa tomorrow so we tell her mama and my mama and papa. I call you at the hotel, I still have the piece of paper."

"Okay, Julio. All the best. Don't worry about a thing." I hung up, chuckling, and went right back to sleep.

Well, sir, it happened again.

I was shaken out of my sleep by the strong, skinny hand of Admiral MacDonald. It was seven-thirty and a bright New York morning. Dalhousie had pulled a blank canvassing the neighbourhood for Gomez, got panicky and bucked it up to higher headquarters.

"Where is he?" the Admiral rasped.

"On his way here with his bride of one night," I said. "He slipped over a couple of state lines and got married."

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"By God," the admiral said, "we've got to do something about this. I'm going to have him drafted and assigned to special duty. This is the last time—"

"*Look*," I said. "You've got to stop treating him like a chesspiece. You've got duty-honour-country on the brain and thank God for that. Somebody has to; it's your profession. But can't you get it through your head that Gomez is a kid and that you're wrecking his life by forcing him to grind out science like a machine? And I'm just a stupe of a layman, but have you professionals worried once about digging too deep and blowing up the whole shebag?"

He gave me a piercing look and said nothing.

I dressed and had breakfast sent up. The admiral, Dalhousie and I waited grimly until noon, and then Gomez phoned up.

"Come on up, Julio," I said tiredly.

He breezed in with his blushing bride on his arm. The admiral rose automatically as she entered, and immediately began tongue-lashing the boy. He spoke more in sorrow than in anger. He made it clear that Gomez wasn't treating his country right. That he had a great talent and it belonged to the United States. That his behaviour had been irresponsible. That Gomez would have to come to heel and realize that his wishes weren't the most important thing in his life. That he could and would be drafted if there were any more such escapades.

"As a starter, Mr. Gomez," the admiral snapped, "I want you to set down, immediately, the enfieldment matrices you have developed. I consider it almost criminal of you to arrogantly and carelessly trust to your memory alone matters of such vital importance. Here!" He thrust pencil and paper at the boy, who stood, drooping and disconsolate. Little Rosa was near crying. She didn't have the ghost of a notion as to what it was about.

Gomez took the pencil and paper and sat down at the writing table silently. I took Rosa by the arm. She was trembling. "It's all right," I said. "They can't do a thing to him." The admiral glared briefly at me and then returned his gaze to Gomez.

The boy made a couple of tentative marks. Then his eyes went wide and he clutched his hair. "*Dios mio*!" he said. "*Esta perdido*! *Olvidado*!"

Which means: "My God, it's lost! Forgotten!

The admiral turned white beneath his tan. "Now, boy," he said slowly and soothingly. "I didn't mean to scare you. You just relax and collect yourself. Of course you haven't forgotten, not with that memory of yours. Start with something easy. Write down a general biquadratic equation, say."

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Gomez just looked at him. After a long pause he said in a strangled voice: "*No puedo.* I can't. It too I forget. I don't think of the math or physics at all since—" He looked at Rosa and turned a little red. She smiled shyly and looked at her shoes.

"That is it," Gomez said hoarsely. "Not since then. Always before in the back of my head is the math, but not since then."

"My God," the admiral said softly. "Can such a thing happen?" He reached for the phone.

He found out that such things can happen.

Julio went back to Spanish Harlem and bought a piece of the Porto Bello with his savings. I went back to the paper and bought a car with *my* savings. MacDonald never cleared the story, so the Sunday editor had the satisfaction of bulldozing an admiral, but didn't get his exclusive.

Julio and Rosa sent me a card eventually announcing the birth of their first-born: a six-pound boy, Francisco, named after Julio's father. I saved the card and when a New York assignment came my way—it was the National Association of Dry Goods Wholesalers; dry goods are important in our town—I dropped up to see them.

Julio was a little more mature and a little more prosperous. Rosa—alas!—was already putting on weight, but she was still a pretty thing and devoted to her man. The baby was a honey-skinned little wiggler. It was nice to see all of them together, happy with their lot.

Julio insisted that he'd cook *arroz con pollo* for me, as on the night I practically threw him into Rosa's arms, but he'd have to shop for the stuff. I went along.

In the corner grocery he ordered the rice, the chicken, the garbanzos, the peppers and, swept along by the enthusiasm that hits husbands in groceries, about fifty other things that he thought would be nice to have in the pantry.

The creaking old grocer scribbled down the prices on a shopping bag and began painfully to add them up while Julio was telling me how well the Porto Bello was doing and how they were thinking of renting the adjoining store.

"Seventeen dollars, forty-two cents," the grocer said at last.

Julio flicked one glance at the shopping bag and the upsidedown figures. "Should be seventeen thirty-nine," he said reprovingly. "Add up again."

The grocer painfully added up again and said. "Is seventeen thirty-nine. Sorry." He began to pack the groceries into the bag.

"Hey," I said.

We didn't discuss it then or ever. Julio just said: "Don't tell, Beel." And winked.

C. M. Kornbluth

"Gomez," from the short story collection entitled THE MINDWORM, to be published in the Autumn by Michael Joseph Ltd.

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The chances of survival for a man adrift in the void between the planets clad only in a spacesuit are practically nil. Geddes was one such who was rescued but thereafter it was up to him whether he lived or not.

SOLE SURVIVOR

By Sydney J. Bounds

Illustrated by HUNTER

Tom Geddes rose like a cork from the bottom of some dark and watery abyss and broke the surface of consciousness. The blackness now became a material thing, no longer of his mind alone.

Space engulfed him. A black void extended before his eyes, reached over his helmet and disappeared under his magnetic boots. It curved past on either side of him. It might even travel clear through him and—

He *had* to know what was behind him. A gloved hand grabbed for the signal gun at his waist; he swung his arm out and back and pulled the trigger. The red flare erupted and soundlessly showered sparks through the emptiness of interplanetary space.

Reaction set him moving; he felt the pressure of his suit against his body. And he turned through an arc. The infinite void was still before him, around him, behind him. He was alone between worlds —alone with his fear.

He choked off the scream which threatened to bubble from his lips. Don't panic, he told himself, think ! He withdrew his arms from the metal tubes leading to flexible gloves and fumbled with the portable radio set built into the chest wall of his suit. Battery on; microphone on. Give it a moment to warm up . . .

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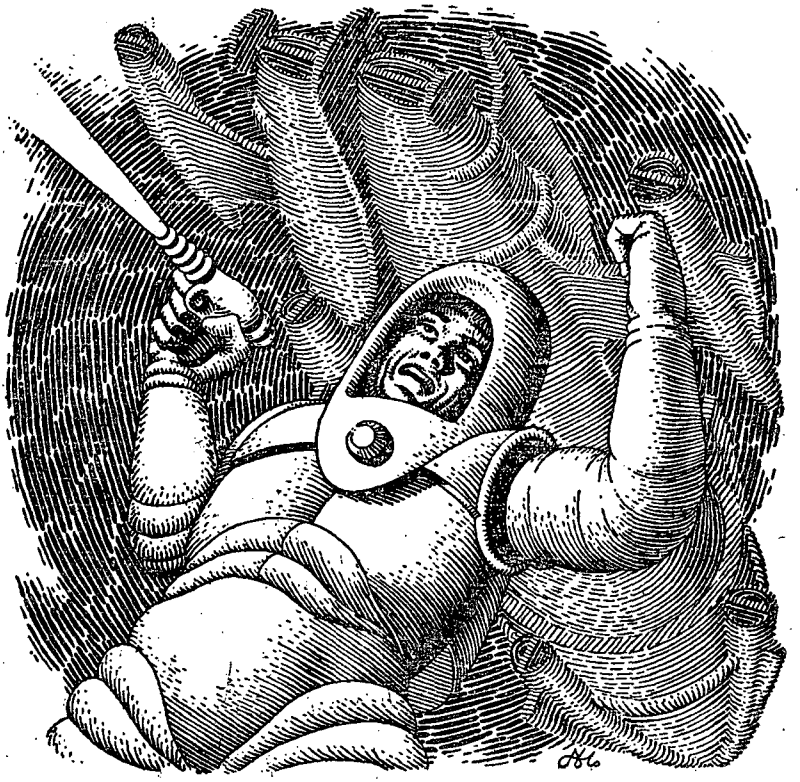

"Geddes calling *Conqueror*. I am adrift in space. Can you help me?"

The eternal static of the stars crackled in his helmet but no answering voice came to still the mounting panic of Tom Geddes. The set had only a short range; and, as if to overcome that limitation, he raised his voice and shouted.

"This is Geddes. For God's sake answer . . . *Conqueror* . . . anybody . . ."

The static hissed and whistled and moaned, but there was no human voice to bring him comfort in his terrible loneliness.

He remembered clearly what had happened. The *Conqueror* was five days out from Marsport and bound for Europa, satellite of mighty

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Jupiter, with a cargo of mail, tools, and provisions. Trouble with the pile had forced the captain to plot hurriedly a shorter route through the asteroid belt—and the spaceship had been hit.

Geddes had gone outside to seal the hole. Then had come an explosion. Whether the pile had finally blown up or another meteor had struck the ship he could not say. And as the result would be the same it didn't matter. *Conqueror* no longer existed and he was the sole survivor.

The sole survivor . . . he should consider himself lucky, he supposed. Yet death aboard the ship would have been instantaneous, while now he might drag out a miserable existence for days. His spacesuit would be his coffin when the air in his tanks gave out. He had food capsules, but no water, a signal gun and a coil of rope. A modern Robinson Crusoe without an island, adrift in the limitless sea of space; without Man Friday—and, above all, without hope.

For *Conqueror* was scattered dust in the void and he had no idea how far he might have travelled during his period of unconsciousness. A light winked on and off . . . it was only a passing asteroid catching the sun's light. A tiny airless world like thousands of others, mocking him with its pretence of asylum.

He wasn't thinking clearly. He was wasting air and the life of his radio battery. Numbed fingers groped for the controls inside his suit; he switched off the radio and cut his air supply by half. He opened a pocket and popped a vitamin pill into his mouth.

Now what? He studied the bright host of stars, noting their position. Mars—Jupiter. Hopeless. And no ship would come through the asteroids. Tears welled up and blinded him; fear, and the raw emotion of survival drove him to desperate action.

There was one chance only. He must get above the asteroid belt and pray that his radio or signal gun would reveal him to one of the infrequent ships travelling the Mars-Jupiter route. An interval of six days between sailings . . . his air wouldn't last that long.

Nevertheless, he used his gun again, this time with deliberation, giving his motion a new direction. Six shells in the gun, and two expended. There really was no sense in hoping; his rescue could only be a miracle.

There was nothing solid under his feet and he had to be careful not to think about that too much. The lonely infinities of space could bring madness if he dwelt on them. It was best to close his eyes and dream . . .

Sometimes he dreamt of women, warm under his hands and whispering words of love. Sometimes he lay in a rock pool beneath a waterfall

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and let the cool drops run into his mouth. And sometimes he was in a sports arena with the roar of the crowd pounding at his eardrums.

Time had no meaning for Tom Geddes, floating half-conscious through eternal space, drifting endlessly towards a rendezvous he did not believe in.

Occasionally, he would return his air supply to normal and take another vitamin pill; once he fired a signal flare to help him on his way.

The slow hiss of air in his helmet was the hiss of escaping water from a pipe, the sound of sibilant voices, the jets of a spaceship coming to save him. Sometimes it was the voice of God.

He used the radio once more but the crackling static was bad for his nerves; so was the stench of his own body. A spacesuit is built for temporary use, not for indefinite living; the sanitation was bad and he sweated constantly. There was one period when he had to restrain himself from tearing off the suit to get away from the smell . . .

When he first saw the ship he thought he was still dreaming. It was a dream he encouraged, believing in it with desperate faith. The vision persisted; a dark shape which blotted out the stars above his head.

He turned on his air to full strength and the ship was still there. A tremendous excitement swept over him. Rescue! He shouted into the microphone and fired another flare, but the ship ignored him. It was passing by, slow and huge and majestic, black as space itself.

"Oh, God," whispered Tom Geddes, "*make* them see me. Make them hear me. They can't leave me to die, not now, not with deliverance so close at hand."

But the ship took no notice of him as it sailed past. He calculated the direction and fired his signal gun; the strange spaceship revolved until it was under his feet and he looked down on a black, craggy structure. He used his last shell to give him extra velocity.

He fell towards the ship and knew he was going to make it. Feet first, he thought; magnetic boots first. But suppose the skin was of some non-ferrous metal? He uncoiled the rope at his waist, ready to secure it to some prominence of the ship's exterior.

Why don't they answer? he wondered. Why don't they see me? He was near enough now to make out the form of the ship and it was like no other spaceship he had seen before. The shape reminded him vaguely of a shell he had once found on the sea-shore, all convolutions and whorls, with knobbly protuberances. The pointed end would be the front, he imagined, and the open end the rocket tubes. The jets were not firing just now.

A shiver of fear ran through him as he realized this ship had not been made by man. The thing was *alien*.

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He looped the rope round one of the many projections and hauled himself in. His boots held to the surface, not strongly, but well enough. The metal was an alloy then, with little iron in it. He made fast the rope.

He sat down, clinging to a spray of metal which sprouted from the ship's skin like some bizarre decoration. Perhaps it was a decoration; at least, he could guess at no purpose it might have.

There was still no indication from inside that the crew knew he was attached to their vessel, like a limpet to a rock. He had switched off the radio the moment he realized the ship was alien. He felt cold, for the spell of the unknown gripped him. What should he do? To cast off meant suicide—but could he expect anything less than death from those inside the ship?

He had no choice in the matter; his sole chance of survival lay with this alien ship. The pressure of air from the tanks on his back was low—a dangerous sign. He rose to his feet and paid out the rope, walking over the curved, irregular surface. He found a window and stooped to peer inside.

The interior was dark and he could see nothing. There was no sign of movement. He hammered on the window with the butt of his signal gun. Nothing at all happened. He moved further along the ship, to another window, and struck again with his gun.

No light, no sound, no indication of life came from inside. Tom Geddes thought hysterically: a ghost ship! No-one lived in it—the thing just drifted through space and had no meaning. Perhaps he was still dreaming . . .

He kicked at the black metal underfoot and reaction carried him off into space; the rope jerked tight and held him suspended. It was real enough. He hauled himself in again and searched for an airlock. Somehow, he must get inside if he were to live.

After crawling round the ship, he found a circular panel which looked as if it might open. There was no push button or lever to indicate how the lock was operated, no crack into which he could force a lever. He tried everything on that door; pushing at it, hammering, beating it with his gun. Nothing moved; the lock would not open. Or perhaps it was not an airlock at all—you just couldn't tell with an alien ship.

Despairing, he crawled over the hull. He used his radio again, calling for help. He beat the windows and the black metal skin with his gun. Sweat poured off his face and fear beat through him in waves. He *must* get inside . . .

Static hummed in his helmet and the stars glittered far off, bringing him their eternal light. He judged that he was topside now—if the

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shell-shape had a top at all. The dark void of space leered at him He found a circular patch that was not metal; it moved inward under pressure, like an inset of rubber. He pressed it several times but, as far as he could tell, nothing happened. He had forgotten that sound does not travel in a vacuum.

Later, returning to the airlock, he found it open. Spheres of some yellow fluid bubbled out and moved round the ship. He pushed his gloved hand into one and found it viscous. The globules surrounded him, more and more rolling out until the internal pressure dropped to zero.

Tom Geddes entered the ship.

There was no airlock after all; the door opened directly into an irregular shaped chamber with a passage leading off it. Just inside the door was another circular patch that gave under his touch. The door closed behind him.

Darkness and silence—with the hiss of air in his helmet reminding him the chamber was a vacuum as perfect as space. He had to do something about that. Think, man, think ! No matter how alien the crew, they would need some sort of atmosphere. Why was there no airlock ? What was the nature of the golden-yellow fluid which had left the ship ? Why was the door controlled from a disc on *top* of the spaceship ?

He tried to imagine beings who could breathe the viscous stuff into their lungs; and shook his head. That was not the answer. Suppose, then . . . suppose . . .

The door had opened under pressure from topside and the absence of a lock suggested that the ship was designed to be left and entered only under normal conditions on some alien planet. Those conditions would apply when the ship was immersed in the fluid which had been inside the ship.

Did the aliens, perhaps, inhabit the ocean of their home planet ? Was the strange fluid their planetary environment—a liquid which would correspond to Earth's seas ? The aliens as underseas denizens ? Fish-like, breathing through gills ?

Tom Geddes became excited as he examined the idea. If he were right, then a breathable gas—perhaps even oxygen—must be dissolved in the liquid. A gas, or mixture of gases, contained in tanks for that purpose. He searched at once for the tanks.

His search carried him throughout the ship and it soon became apparent that no alien was aboard. Where they had gone, or why, was something he did not think about just then. He had other things on his mind, the most important of which was the business of locating the aliens' air supply.

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He found no tanks. If they existed—and they must exist—they could only be built into the walls. There would be a valve and control mechanism somewhere. He headed for'ard to the control cabin . . .

A really nasty idea crept into his mind; if the air supply were automatically controlled, he'd had it. There must be a manual regulator for emergencies—or didn't those who built this ship have emergencies?

The control cabin was cone-shaped with a mass of rubbery insets wedged into the forward panel. There was a seat for the pilot, but its construction left plenty of room for doubt in Geddes' mind as to the form of the aliens. And not one of the push-panels bore a label.

He stared about him, angry and frustrated, terribly afraid. Behind the panel there would be wiring or pipes or something of that kind; there must be—he would have to trace out the system, then he'd learn which push-panel operated the air tanks.

He needed tools—and that meant another search. Wearily, he dragged himself round the ship once more. The only light he had came from the stars, filtering through the windows. Everything was in deep shadow, hard to make out. Didn't the aliens need light? He supposed not, if they came from the deeps of some ocean. That might account for the irregular protuberances lining the walls both inside and outside the ship; they found their way around by the sense of touch.

He found a door that opened on to a small room by pushing another inset. Inside were strange metal rods, twisted and curving through all manner of intricate forms. He selected one which approximated to a crow-bar and returned to the control panel.

He worked furiously and uselessly for some minutes—till he discovered that the spiral end of the bar screwed into a recess. Then the panel swung open to reveal a complexity of intermeshing tubes. He settled to study the layout and gradually formed some hazy notion of the ship's operating mechanism.

He decided which tubes made up the air system, found the controlling inset and pushed it once. A cloud of greyish gas swirled about him, filling the chamber and spreading through the spaceship.

He had no way of testing its chemical properties; only the obvious one of opening his visor and breathing. And he had to take a chance that the alien gas would not be poisonous, for his own tanks were almost empty.

He counted slowly: one . . . two . . . three . . . and lowered the visor of his helmet. The alien gas swept in on him and he breathed deeply. It tasted sweet. His head ached and he began to choke; his senses reeled; he felt himself falling.

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He lay on the floor, gulping the gas into his lungs, fighting for consciousness. It was too much effort to reach up and close his helmet again—and anyway there was no point to that. He might as well be poisoned as suffocate.

His lungs adapted after a time and he was able to stand. Whatever the mixture, it contained a sufficient percentage of oxygen to keep him alive. Tom Geddes set about making the ship his own.

There were so many things he had to do at once. Getting the rockets to work was of primary importance; but he was weak and tired. He needed food and water and sleep.

His thirst mounted as he thought about it. Some of the yellow fluid still clung in tiny spheres to the walls and he scooped up one and pushed it between his lips. It was like trying to swallow gum; he had to force it down—and instantly vomited.

He writhed on the floor for some time, till there was nothing left in his stomach and the stench drove him to leave his spacesuit and inhabit another part of the ship. He felt weaker than before and ate the last of his vitamin pills. Fine things to keep a man going, but with no bulk to them; his stomach craved bulk.

He pressed several insets but found nothing the aliens might have used as a larder. Not till he was at the point of giving up did he find the food supply; then he wished he hadn't. *Things* came out of the larder and swarmed about his ankles. Tiny, living creatures which moved at high speed and were equipped with needle-sharp lances. They attacked him, stinging his legs and driving him mad with pain. He crashed about the room, stamping on them, trampling them underfoot till not a single one was left.

He pulled down his socks and examined his ankles; a purple rash was spreading up his limbs, bringing with it fiery agony. He scratched and scratched and cursed himself for ever leaving his spacesuit.

He walked the corridors and stamped his feet to get rid of the pain in his legs. The rash burned; it was some form of venom; and it felt like a thousand tiny punctures filled with fire.

He knew hunger again and returned to the scene of the attack. The floor was covered with squashed bodies and a purple stain oozed from them. He put on gloves and pulled out the soft interior of the creatures, taking care to strip away the needle points with the shell. He ate hungrily.

The taste was sour and he felt sick again, so he stopped eating once the sharp emptiness of his stomach was appeased. Presumably these things were the aliens' idea of fresh meat.

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He made his way to the control room, intending to fathom the rocket-firing mechanism; but he was so tired he could hardly keep his eyes open.

The ship was cold; too cold for him to lie on the floor and sleep. It seemed that the aliens could dispense with heat as well as light. Perhaps they slept in the golden-yellow fluid—but the pilot had a seat. Hoping to find sleeping accommodation, he started round the ship again, pressing inset buttons and inspecting whatever lay behind the circular doors. Most of the things he found had no meaning for him.

One room was heated. A rack extended from wall to wall, its surface a series of indentations. It did not look very comfortable, but he was past caring. The room was warm and he would sleep there.

He crawled onto the rack and the door closed automatically. There was no window. He dropped into instant sleep . . . and fought his way up through nightmare. He was in Hell and flames were devouring him; he drowned in his own sweat. His own voice, screaming, woke him.

There were no flames but the heat was real for all that. The place was like an oven; even the air seared his lungs as he gasped for breath. His clothes smouldered. Desperately he felt for the inset to open the door. His fingers touched metal and the metal burned . . .

Panic assailed him. He had to get out of that room, and fast. He tried the wall again. Which side was the door? Darkness surrounded him and the smell of scorched flesh filled his nostrils. Keep calm, Tom Geddes, think! He forced himself to explore the wall with his fingers, feeling for the inset while pain shot up his arms. He wouldn't have any fingers left if he didn't find it soon. Tears ran down his cheeks . . . then a softer patch gave under his touch and the door opened.

He stumbled into the passage and the air was like an icy blast, driving sleep from him. What the devil had he got into this time? An oven, or— There was something about the rack, with its series of smooth and regular indentations that reminded him of a chicken incubator. Were the aliens, then, egg-layers? Sticking to his analogy of underseas life, it was possible—fish laid eggs, didn't they? And it would explain the heat.

He returned to the control room, determined to get the rockets working. He stared at the mass of tubes and connections and pondered the problem. Atomic drive? Or something completely alien?

Where had the ship come from anyway? And what had happened to the crew? They were questions without answers for Tom Geddes.

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He began tracing the power system. Atomic motors without a doubt; the engine room was unshielded and he left hurriedly.

Well, at least he had sorted out the right controls. Now to try them.

He looked at the pilot's chair with trepidation; he supposed he *could* fit his body into it somehow. He pressed the firing button. Metal clamps seized him and a shining needle thrust under his skin, injecting something . . .

His brain whirled and he vomited again. The ship leapt forward, acceleration building up. He could feel black-out coming on. With one last effort, he lifted a leaden arm and dropped a weighted hand onto the STOP inset.

With the power cut, acceleration ceased. The metal clamps released him and he staggered about the room, drugged. So the aliens relied on a drug to combat the effects of acceleration . . . he couldn't risk that again.

The ship was a trap, not intentionally—doubtless all these things were normal for those who had built the ship—but a trap nevertheless. Tom Geddes knew he was never going to be able to do anything with it.

It was some hours before the effect of the drug wore off and he began to think about communications. The aliens would have some kind of radio system, he supposed; and commenced another search.

It wasn't radio and he couldn't decide the modus operandi, but he knew the gadget before him was some kind of spatial communicator. It had a lot of wiring fitted into a grid, a power pack, and the inevitable inset. He thumbed the rubbery pad and waited hopefully.

Nothing obvious happened. There was no sound, no movement, no tell-tale flicker of light. Nothing. So far as he knew, it might be dead.

He kept his thumb on the inset; maybe a power beam spread through the interplanetary void; maybe it would cause interference with the radio of a passing Earth ship. That was his last hope.

The shell-shaped ship pursued an aimless course through space. The stars shone coldly. Time had meaning only insofar as Tom Geddes knew he had not long to live.

The stubble on his jaw collected beads of sweat. His clothes were filthy and his body smelled. He talked to himself because there was no-one else to talk to.

His throat had dried up and his stomach wouldn't take any more of that purple, pulped flesh from another world. He was coughing now, for the gas acted as a slow poison; his lungs wheezed like an ancient bellows.

He shivered with cold.

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Fever came, for he had not shaken off the effect of the acceleration drug as well as he'd thought.

Only occasionally did he return to press the inset of the radio that was not a radio. He had no real hope left.

He dreamt, and there was madness in his dreams. His speech rambled. He could not stand because the rash was spreading about his legs and his ankles swelled painfully. He began to cry, not because he must die, but because he must die alone.

The stars blacked out—

A shape gathered in the void and he saw the red flame of rocket jets. Staggering drunkenly, he lurched to the window and stared out. A ship . . . rescue . . . *he was saved* !

He watched it draw near and his red-rimmed eyes made out the form of the ship. With recognition, peals of hysterical laughter broke from his lips.

The ship was alien.

Sydney J. Bounds

Rising Costs

We regret the increased price of *New Worlds* as from this issue, which is to offset the increased production costs of paper, blocks, and printing which came into force in January, 1955. It also enables us to maintain our high literary standard for your reading pleasure.

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Science fiction generally lends itself readily to a good murder mystery with an unusual or scientific explanation of the crime, as in Alfred Bester's novel The Demolished Man. *The little cameo herewith by Kenneth Bulmer has just such a plot-pivot.*

THE BLACK SPOT

By Kenneth Bulmer

Illustrated by HUNTER

"So help me, I'll kill that brass-necked, regulation-bound . . ." Scrappy White's nostrils pinched thinly and the futile anger of the disciplined against a brutal individual representative of that discipline compressed his lips and made his jaw muscles jump.

The silence in the turret was nerve-jangling.

Then Basher Stokes rolled off his coverall phlegmatically exposing a shining radiation-burn scar along one arm and flopped back again into his sponge rubber seat.

"You wouldn't kill a Venusian tree-spider, Scrappy and you know it," Basher said with heavy humorous scorn. "If that louse of a Lieutenant wants us to carry on firing drill for another hour, we just carry it on."

"You don't know, Basher, you don't know." Scrappy muttered under his breath, his courage wilting at the picture his hasty words conjured up.

The rest of the turret crew, mainly small nimble men, stood undecided, hating the heat-filled prospect of another hour's shoot. The tinder was dry, waiting, only the spark was needed.

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Droop-eye Dexter decided that it was about time he exerted his authority as Turret Captain. Much as everybody aboard *Taranto* hated the lily-sainted guts of Lieutenant (Guns and Mines) Purchison, the fact nevertheless remained that he was an officer of the Terran Space Navy and therefore due for his meed of obedience. Like the other dozen occupants of the turret Dexter had been in the act of donning his uniform, then Lieutenant Purchison had happened in like a vulture over a corpse and ordered a further hour's drill. Pulling his shirt over his head Dexter phlegmatically tossed it towards the magnetic clamps, then he faced his crew squarely.

"That'll be enough of that. Gunner White—get to your post and watch your tongue." Dexter knew how to quell men with a look. He glared round the turret until his crew were again stripped to the waist and sitting in their seats before the complex mechanisms of the 200 mm. energy weapons.

"We'll run through the drill again. By that time Lieutenant Purchison will have laid on a target and we'll blast it out of space. Understand me? We're going to put up a one hundred per cent shoot."

"Aye, aye, Teecee," the men mumbled, at once absorbed in their tasks. Dexter smiled thinly. He knew that these semi-raw recruits would snap into Naval efficiency if he tongue-lashed them with the hint of a doubt as to their gunnery ability. He'd make them a good turret crew yet, even if he fried every one of them in the process.

He ran rapidly through the preliminary drill, watching keenly as Basher and his assistant at the control panels juggled with the power intakes, as others of the crew balanced the electronic intake and output, as all the dozen men went with that deceptive smoothness of the newly trained and un-battle-hardened through their various duties. But most keenly he watched where Scrappy White—all five foot of him—was perched in the firing control basket high up in the loom of the twin breeches. Dexter knew Scrappy well. Knew him as one of the finest free-shooting gunners the Navy had ever produced. Between them they had the job of moulding this crew into efficient crewmen. Now, with the malevolent Purchison playing haywire with Scrappy's morale, Dexter was apprehensive as to the efficiency with which the shoot would be carried out.

In the brief lull before the first of Purchison's rocket targets was released, Dexter had time for reflection, and the recurring wonder that he—a rising young lawyer at twenty-seven—found himself aboard a Terran Space Cruiser, circling with other units of the reserve echelon of the Ninth Fleet around some God-forsaken sun system or other somewhere in the Galaxy. The path from the Inns to Turret Captain

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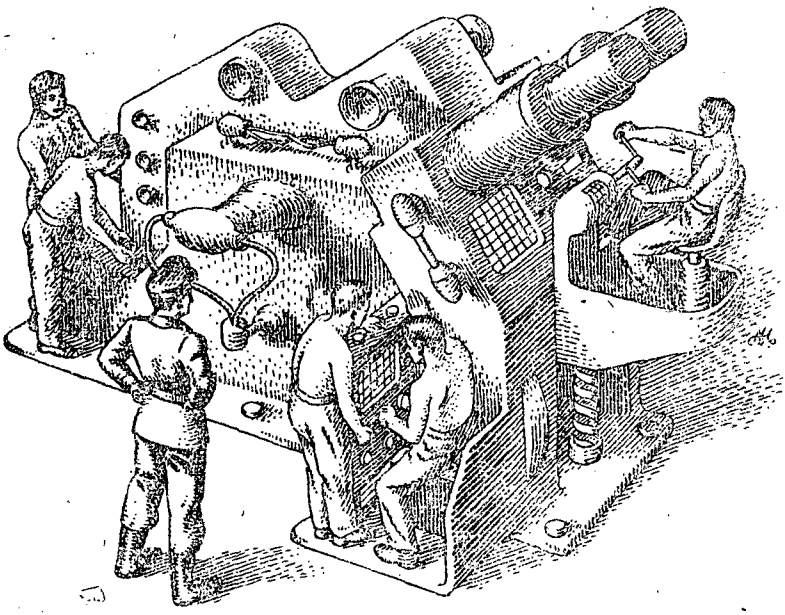

in Space appeared to him to savour so much of an impossibility that it never failed to astound him. And why he had been detailed to *Taranto*—an old and patched heavy cruiser—to give a turretful of recruits the benefit of his experience escaped him. It must be some high brass idea of a joke.

Young Phil Stone on the close-radar reported calmly.

"First target coming up, teecee." The spotter ran off the ranges and vectors as they narrowed in on an interceptor course over the cruiser.

"Hold your breaths, boys, and knock him down." Dexter had barely time for the words before everything happened at once. Basher was juggling his controls, trying to ensure a continuous and smooth flow of power to the electronics men. They in turn balled all that power held it like some spark-spitting sphere of saliva, and at Scrappy White's decisive firing pressure, released it like an oldster shooting at a cuspidor. Energy crashed away from the twin 200 mms. and the turret heated up with the backlash.

Again and again the surge of power lashed out.

A furrowed frown of concentration on his sweating face, Dexter checked the percentage of hits and misses. The crew were doing all

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right. Just how they would perform when their targets were shooting just such masses of energy right back at them no-one could foretell until the event. Somehow, Dexter thought they'd be all right. At least, he hoped so.

Everyone was drenched with perspiration. Metal surfaces became unbearable. And still Lieutenant Purchison sent his automatic rocket targets for them to knock down.

"How much longer?" Scrappy howled from his perch, his thin face shining in the blue battle lamps. "That brass—"

The rest was lost in the whiplash command that Dexter flung at the gunner. With all the heat and action and movement, the turret was normally unnaturally quiet. You expected the crash and thunder of heavy weapons, instead there was only the impersonal crackle and mutter of electronic equipment. And amid it all, with the sweat furrowing his face and laying streaks down his wire-thin body, Dexter found a growing worry gnawing at him. It just wasn't like Scrappy to react in this fashion to the harsh and impersonal discipline to which by this time he had so well adapted. Not at all like him.

Before that train of thought ballooned into over-importance in his mind, Dexter saw with concern that the shooting was becoming terrible. Percentage of hits was way down.

"Scrappy," he said again, forcefully. "Get your mind on those damned targets out there and forget how hardly you're being treated. I want some results."

The shoot continued, and with it grew a repressed viciousness in the turret, a clouding miasmic fog of hatred that became more apparent as the clock ticked on. Dexter wiped sweat from his face. What had got into the crew?

When he was seriously considering giving the order to abandon the shoot, with all the enquiry and unpleasantness that would follow, his exterior phone rang. It was Lieutenant Purchison. Dexter winced as the acidic words ruffled his already jagged nerves.

"All right, men," he snapped harshly, transferring some of that anger onto his crew. "Outside. The Lieutenant wants us to clean up ship. Move."

The chorus of grumbles were almost unheeded by Dexter. He felt raging anger, and frustration made his face tight and pinched. The crew had put up a lousy shoot. Now, because the violence and heat of the energy weapons' discharge seared the ship's hull, his crew had been detailed to go outside and clean up and repaint. He lashed the men along the corridor, pulling on their coveralls and grumbling, let them see quite plainly that he was disgusted with them.

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They congregated in a sullen-faced group by the Quartermaster window, drawing their spacesuits, giving a quick signature as each man accepted a shapeless rubber bundle and big fishbowl helmet. Through the window Dexter could see row on row of spacesuits hanging like carcases in a butcher's shop.

" Size eight," he said automatically and signed for the suit that was thrust across the sill.

Each man donned a suit and Dexter went methodically round checking to make sure each suit was one hundred percent. Lieutenant Purchison came waddling down the corridor in his suit. Officers had personal spacesuits, ratings drew theirs, as required. Collecting the patent paint pots and fountain-pen brushes they huddled into the lock. Dexter felt sure that Purchison must sense the hostility that flowed around them all in an almost visible black cloud.

They waited whilst the cycling light glowed. Quite suddenly the lock main lights blinked then died in a fading orange glow. Over the intercom Dexter heard Purchison's quick exclamation of annoyance. They all stood there in the darkness, with the single brilliant eye of the cycling light glowing across the bowl helmets and picking highlights from oxygen cylinders. Fractionally, Dexter caught some of the eerieness of it all, of the frightening concept that man, a creature of flesh and blood, dared challenge the might of space.

With the opening of the outer valves that mood passed, to be replaced by that recurring sense of wonder. Trailing with the crew outside the ship and clipping his safety rope home, he caught some cosmic jest that he should be here, in space, with some alien sun shining big and brassy in the blackness.

Filters clicked over his face plate. The men crabbed along the hull, found their gun embrasure and began to clean ship. As it was not possible to dip a brush in a pot of paint in space and expect to carry on as mormal—paint wouldn't break under its own weight—the fountain-pen brush had been developed. By capillary action the paint travelled from the pot and onto the surface being worked. Dexter supervised as Scrappy went carefully round the cleaned up hull sections with a brilliant orange. Other sections were variously coloured as laid down in Space Navy regulations. The alien sun kept obstinately directly ' up ' from their viewpoint. *Taranto* had no spin on at the moment, she had only just ceased a practice shoot. Dexter began to look forward to a fresh shower and a smoke.

They were almost through when he heard it. A low, gurgling moan. His first thought that a helmet had cracked was replaced by consternation as Purchison's suited figure drifted past him, limp and starfished.

" G — G — g. God—my head. I'm frying !"

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"Lieutenant Purchison!" shouted Dester. He dived after the drifting officer, collided, hung, hauled back on his safety rope. He made straight for the lock. Control were evidently on the ball—the outer valves opened and Dexter went on through. Some of his crew slipped in after him and the doors closed. The main light had been fixed and in its pitiless glare Dexter could see the blood-suffused face of Purchison through the face plate filter. Impatiently he waited for cycling to finish and without bothering to proceed further into the ship he ripped off the helmet, exposed the officer's ghastly face.

From the swollen lips a string of nonsense poured, punctuated by a shrill bubbling that made Dexter feel physically ill. The delirium passed even as he watched. By the time the ship's doctor arrived, Lieutenant (Guns and Mines) Purchison was dead.

Dexter made his report, still shaken by the speed of the whole affair, telling what there was to tell. Apart from the delirium and symptoms of heat-stroke there was nothing to give any indication why Purchison had died.

"Did you see anything strange out there?" the ship's doctor enquired, his pudgy, skilled fingers helpless now before the lifeless husk lying on the deck plates.

"Strange?" Dexter laughed mirthlessly. "What isn't strange in space? No." he said bitterly. "I saw nothing strange."

A stretcher-bearer crew bore away the remains, carefully removing the spacesuit from the body and once it was free throwing it down like refuse. Looking after Purchison's body, Dexter was aware of the men who had accompanied him into the lock crowding close, their breathing hoarse and ragged in the confined space.

"What happened to him?" Scrappy White's face had a parchment-drawn intensity that momentarily frightened Dexter.

"He must have had a weak heart," someone said, and Dexter knew that no-one ever considered that possibility for a single moment. Spacemen just didn't have weak hearts. The First Lieutenant appeared in the lock and shouted brusquely.

"Come on out of the lock, you men. A party is waiting to board ship. T.C. Dexter—I want a word with you. Dismiss the balance of your crew."

"Aye, aye, sir," Dexter said automatically. He picked up the empty and pathetic folds of Purchison's suit and trailed after the others. The lock doors shut. Facing the First Lieutenant, Dexter tried not to allow the natural thoughts that clamoured to enter his mind any footing. That way lay only the blind alley of space cafard.

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"Well, Dexter, this would have to happen now," the First Lieutenant said fretfully. "What the hell *happened* ?"

"I don't know, sir. It was all over so fast—I had the impression that Lieutenant Purchison was choking, at least he sounded like that, and he babbled something about frying." Dexter's face clouded in memory. "He said, as far as I recall, 'My head. I'm frying.' Just that."

"Nothing else ?" At Dexter's reply the First Lieutenant appeared to come to a decision. "We cannot do anything until Doc carries out a P.M. I'll order that right away. As far as your crew are concerned, Dexter—"

But Dexter wasn't listening. In his hands the folds of Purchison's suit slithered and flowed like jelly to the deck. He stared at first with uncomprehending eyes and then with a realisation of its meaning at a small black patch on the suit. The patch was directly at the base of the helmet ring. Dexter touched it experimentally. Hard and shiny. Paint. Black paint.

"Lieutenant," Dexter said, and his voice sounded like a far off cry in the night. "Lieutenant Purchison was murdered."

"Murdered ! What the hell are you talking about ?"

"See—this patch of black paint. Here, painted on the suit right at the nape of Purchison's neck."

"My God !" The First Lieutenant seized the suit, his fingers making the rubber squeal. "My God, Dexter, you're right !" There was no need for old spacemen to ponder the significance of the paint. The silver suit reflected heat radiations from the sun, the black patch accepted those radiations, created a spot of intense heat. And that spot had played directly onto the nape of Purchison's neck. No wonder the officer had died of heat-stroke. Dexter felt ill as his imagination conjured up the living hell exisiting inside Purchison's helmet.

"Whoever did this was diabolically clever," the First Lieutenant's nostrils quivered. "I'll find the—— I'll find him. So help me."

With that Dexter was caught up in space-hard Naval routine. The turret crew were rounded up, brought under open escort to stand in a little group, talking uneasily, their eyes roving with mutual suspicion from one to another. Inevitably, Scrappy White's threat was recalled. Acting as though he were seeing this farce with the eyes and mind of a distant observer, Dexter stood futilely by as Scrappy was charged and marched away to the cells. Later, Dexter wandered the corridors of the ship, conscious of hunger and yet unable to eat, fretting the problem over in his mind.

Hell—he knew Scrappy ! The little guy was never the sort to murder

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anyone in such a methodically gruesome way. It just didn't stack up. Dexter went back to the space-suits, sought and obtained permission to inspect the silent rows of rubber and plastic and glassex hanging behind the little window.

Quite what he expected he was not sure. When he found distinct traces of black paint smeared over the finger-tip tools of a suit he was still unsure of just what he was doing. He stood for a long while staring at the cluster of knives and pliers, grippers and hooks that terminated the spacesuit's sleeve. The black paint could be analysed to check with the paint on Purchison's suit. That it would be different didn't occur to Dexter. The stuff was smeared around as though the wearer of the suit had been working under difficulties. Dexter's mind went back over the events leading up to the murder.

In the air lock. That had been the time, Dexter felt confident—when the paint had been applied during the failure of the main light. Who had been standing near, or behind, Purchison? Dexter couldn't remember. He grinned ruefully. Why should he? He had been thinking, he remembered, of the eerie effect of the cycling light and of his own rashness in ever venturing into space.

He shrugged and went out of the spacesuit locker to report this latest development to the First Luff. The devil of it all was, he admitted with a flash of sardonic humour, that under the Navy system no-one could tell who had drawn and used that particular spacesuit. It simply meant that someone in the group that had gone out into space was the murderer. And Dexter was pretty confident that it was not Scrappy White.

The First Lieutenant's reactions were precisely those expected by Dexter.

"You've found black paint on the handlers of a suit? Good work, Dexter. That proves the clincher. And you say it's a size five suit? Fine. Fine. White takes a five suit, I'd say."

"So do four others of the crew, sir." Dexter had little hope that the First Luff would worry too much about that complication. He was right.

"Four others? Did any of them utter, or were heard to utter, threats against an officer? Look here, Dexter. You're an old Navy man by now, for all that you're a quondam lawyer. I'll admit off the record that Purchison was not liked—that was a perfect motive in this case. But, dammit all, man, he was an officer? If we're to win this war against Pallas with the raw recruits they keep sending us we just cannot allow any hint of disobedience to orders. The Navy demands discipline." The man's voice rose. "And, by God, Dexter we'll have discipline!"

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"Aye, aye, sir." Dexter hesitated, aware of the weight of tradition that he was attempting to fight. "But, surely, can't we have some sort of enquiry—"

He got no further.

"What's the matter, Dexter? You heard White threaten to kill Purchison. You've admitted as much. Then the agency of the murder is found on a suit that fits White. I do not feel that an enquiry is necessary in these circumstances." The voice was cold. Cold with the immediate and uncaring discipline that enabled men to live and fight—and die—amidst the stars.

What the hell? Dexter was very tired of it all. Just drift along, sweat out his hitch, wait to get back to Earth. So what of Scrappy? He was just a friend, known for a short while, a chance acquaintance in the millions of the Navy. There'd be other friends. And anyway, if he didn't die before a firing squad he would probably be blown into space with a gaping suit by energy bolts from painted Palladian ships. The cards were stacked against human life in space. Dexter began a salute, began the gesture that would absolve him from further contact with this distasteful business, when a jolting picture of Scrappy, joking and laughing, cradled in his basket, blasting with pin-point accuracy at the enemy, came to disturb his hard-won indifference He couldn't let the little chap down! There must be some way—the alien sun!

Dexter never did get to finish that salute.

Instead, eagerly, he said: "With permission, sir, I'd like to ask a favour."

"Permission granted—to ask."

"I'd like you to address the five men who might have worn that suit, sir. I'd like you to tell them that this sun around which we're orbiting emits certain alien radiation that is capable of being picked up by a simple radiation-film detector as a very distinct and quite definitely different form of fogging."

"What the hell for?" The First Luff didn't bother to enquire the mechanics of the thing. Dexter knew that he was fully aware that no such radiations existed.

"Tell them, sir," he went on doggedly. "That these radiations show full strength after six hours from exposure." He glanced at his watch. "That gives us two hours to go."

"T.C. Dexter," the First Lieutenant barked, his face flushed. "What are you talking about?"

"The paint that was smeared on the handling tools would allow radiation to seep through to the man's fingers, although heat would not affect him to any great degree—we can't, unfortunately, pick up

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the murderer by a blistered hand. The murderer will believe that in two hours time his hand will emit these alien secondary radiations."

"So?" The officer was becoming interested. Dexter swallowed, hiding his relief, aware of how narrow had been the dividing line between success and failure. Cheer up, Scrappy, he vowed mentally. The Horse Marines are on their way.

"I know these men, sir. Like myself, they are civilians in Navy Blue. They will believe such a story."

The First Lieutenant, like Dexter, no doubt wondered at times what he was doing riding a can of oxygen through a mind-shattering emptiness. The very fact that he had been promoted to the onerous duties of exec. of a heavy cruiser was ample proof that he was not a fool. He grinned lopsidedly.

"All right, Dexter. I'll play along—mainly, I tell you frankly—because you're a damn good Turret Captain. You should know your own men—all I want to do is lay hands on the man who murdered Lieutenant Purchison." He hesitated, and added: "And, Dexter—I'm not happy that White did do it. I had him with me when the old *Deucalion* shattered off Plantin. Whatever you plan I hope it works. I'll tell the men concerned right away."

All Dexter could say was: "Thank you, sir."

Two hours later Dexter walked with the First Lieutenant towards the small knot of waiting men. Marines stood watchfully by, their hands close to their belts. Dexter was carrying with extreme care a simple film radiation detector.

The four suspects scuffled their feet, looked at the deck, at the overhead, anywhere except towards Dexter. He did not permit himself a smile. He knew these four men, knew them as normal spacetypes any one of whom might be the murderer. Scrappy had provided motive enough for all the crew when he had threatened to kill Purchison. Motive was no problem, and neither was opportunity. The only problem was—who did it?

That was very quickly established.

Three of the four suspects extended their hands, Dexter, keeping the film hidden from their sight, checked it. Clear. The fourth man held out his hands with confidence. Watching, Dexter saw the film fog and cloud, provide clear evidence that small amounts of radiation were being emitted.

"Here's your man," he said bitterly. He turned away quickly, conscious of a feeling of loss. The crew wouldn't be quite the same again, ever.

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"But how?" the First Luff said later. Scrappy White, beaming all over his urchin face, echoed the query.

"These men would believe my story about alien radiation. What should the murderer do? Cover his tracks. Go down to the turret, or the pile, anywhere on the ship where he could pick up a trace of normal atomic radiation. That would fog the film—both literally and metaphorically."

"So he gave himself away!" Scrappy White crowed.

"Yes—he gave himself away," Dexter sighed.

The sense of loss was a desolation within him. The crew—his crew—would never be the same again, ever.

Kenneth Bulmer.

THE LITERARY LINE-UP

Looking back over one whole year of regular monthly publication (it took five years to attain *that* objective) we have had some very fine stories to our credit in 1954. There may be some feelings of regret amongst readers that most of the stories written by American authors were rated highly—nevertheless, our British authors have consistently maintained a good *average* standard and we can expect them to improve still further in 1955.

As proof of that, James White has the lead novelette next issue with "Star Walk," a story which is up to his recent high standard and deals with faster-than-light travel and communication problems. Francis Rayer has a long story dealing with his now-famous Magnis Mensas—probably the best in the series to date; John Christopher returns after too long an absence with a delightfully humorous story entitled "Manna"; new author Gavin Neal has "Logical Deduction," and there will be at least two more stories, as yet unchosen.

Story ratings for No. 29 were:

1.	Disappearing Act	Alfred Bester.
2.	The Messengers	Lan Wright.
3.	Into Thy Hands	E. C. Tubb.
4.	The Remorseful	C. M. Kornbluth.
5.	Rockfall	E. R. James.

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Rehabilitation has become a necessary force for good in a world fast becoming over-run by major disasters—famine, pestilence, war, flood. How vitally essential will rehabilitation be for a retiring spaceship pilot unused to the rapidly changing pattern of world behaviour—where even speech and advertising patterns alter from year to year ?

SCHOOL FOR BEGINNERS

By E. C. Tubb

Illustrated by HUTCHINGS

There had once been a time when life was simple. A nice, easy, predictable schedule of sleeping and waking, effort and repose, mating and fighting. A man would wake with the rising of the sun and go out to hunt his food. If he won he would fetch the carcase back for his woman to prepare his meal, if he lost he died. At dusk, with the coming of darkness, he would retire to his cave and pass the night in dreamless sleep. A simple, sane, casual existence, no doctors, tax gatherers, money, shortages, wars, sex problems, housing troubles or any of the things which made civilisation such a dubious blessing.

Then someone who didn't know any better discovered the use of fire and the first complexities set in.

Then some fool invented the wheel and started industry.

Then someone else invented a space ship and men went back to the simple life again. Some of them, that is, not all : and that, thought Dale Ember sourly, was the whole trouble.

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He sighed as he stared down at the dossier lying before him then, making certain that his smile held just the right combination of warm friendliness and human understanding, looked at the man seated opposite to him across the desk. "Well, Captain," he said cheerfully. "It looks as though we've got a slight problem on our hands."

"Have we?" The Captain shrugged. "I don't see it. As far as I'm concerned all this is a waste of time."

"Indeed?" Dale wasn't offended by the captain's attitude. Un-co-operative, of course, but then they always were and one of the first things he had learned was that psychiatrists are never popular outside of smoking-room jokes. He kept smiling. "May I ask why?"

"There's nothing wrong with me."

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Which was a lie of the first magnitude even though the captain didn't realise it. John Williams was a man dedicated to space. That is to say he had been selected at the tender age of twelve and placed in a special school away from all normal family life and outside contacts. He had been taught all about the construction, operation and maintenance of a space ship. He had been taught navigation, a lot of astronomy, quite a bit of electronics, some mathematics, a smattering of chemistry, enough botany to enable him to keep his air-plant healthy and sufficient medicine to allow him to kill or cure himself as the situation warranted.

But he had learned nothing of the social graces, how to earn a living, business, the ten thousand restrictions afflicting normal life or the rudimentary steps necessary in order to strike up an acquaintance with a member of the opposite sex. In order to become a perfect space pilot he had become utterly useless as a citizen and now, because he had reached retiring age, he was being returned to the commercial rat-race of twenty-first century civilisation.

Dale felt genuinely sorry for him.

"Look, John," he said seriously, "all this isn't the waste of time you seem to think. I'm here to help you and you don't have to be mentally deranged for me to be able to do that. In fact, if you were even approximately in that state of mind popularly known as 'insane' you wouldn't be here at all." He resumed his smile. "I want you to forget any tales you may have heard about men in my profession and please try to rid yourself of stupid prejudices. After all, did you protest when the doctors gave you a medical ?"

"Of course not."

"Well then, why protest now ?"

"It isn't the same thing at all," protested John. "A medical is the usual thing, if I'm sick I want to know it because if I know it then I can do something about it. But if I'm not insane, and I know that I'm not, then where do you come in ?"

"I told you. I'm here to help you."

"Help, hell ! What help do I need ?"

"You'd be surprised." Dale felt his smile begin to slip and let it go. "You're an intelligent man, captain, at least I give you credit for being intelligent, but there's quite a lot outside of your field that you don't know. Won't you admit that perhaps others know more about it than you do ?"

"What's that got to do with it ?"

"More than you imagine. I've got my job and you had yours." Dale deliberately used the past tense. "What would you think of me or any outsider who tried to tell you how to go about your pre-

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flight procedure ? You'd tell him to go to hell, wouldn't you ? But what would you say to a man who asked you to help him form your specialised knowledge ? Would you tell him to go to hell too ?"

" That's different. I haven't come to you for advice—I was sent here."

" That's one of the differences between a wise man and one who only thinks he is. A wise man will admit he needs help and go and ask for it. The other sort refuse to admit anything of the kind."

" And you classify me in the second category." John nodded. " Thank you. May I go now ?"

" You may leave if you want to," snapped Dale, controlling his temper even as he recognised that he was losing it. " but I hope that you won't." He paused, staring down at the dossier before him with calculated intent, knowing that the captain was too well-steeped in procedure to walk out on a superior officer even though he was now technically a civilian. He was right. The other shifted uncomfortably in his chair as he stared at the top of the psychiatrist's head.

" I'm all right," he insisted stubbornly. " There's nothing wrong with me."

" Of course not, and no one said there was," Dale stared calmly at the captain, " but—do you consider yourself to be a normal man ?"

" What ?" Williams blinked and flushed a little. " What do you mean ? Of course I'm normal."

" Are you ?" Dale shook his head. " First, let us define what we mean by ' normal.' We take a group of people, fix arbitrary standards to which most seem to adhere, and we call those standards ' normal.' They're nothing of the kind, of course, they can't be. All we really do is to find a sort of average of human behaviour and, as any statistician will tell you, there can never be anything or any person which fits an ' average.' Logically we can state with perfect truth that no one in the world is truly ' normal.' " He smiled at the expression on the captain's face. " You see, John, I wasn't trying to insult you, I was merely trying to prove to you that your semantic reaction to the word ' normal ' was emotional and not mental. In fact, of course, you are nowhere near being normal."

" Your definition or the popular one ?"

" Both." Dale looked down at his desk and found a package of cigarettes. Shaking one from the pack he offered it to Williams then smiled at the other's refusal. " You see ? You don't smoke, do you ? In that very thing you show that you aren't normal. The latest statistics show that ninety-nine per cent of the entire population of the world above the age of fifteen are addicts to tobacco in one form or

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another." He shrugged as he lit his cigarette. "You don't drink either, and yet ninety-seven per cent of the population above the age of eighteen are regular imbibers of alcohol. You don't dance—not so bad that one, and you don't read the newspapers. You have never eaten in a restaurant and never gone to a public theatre. You don't know how to book a room in a hotel and have never had to find a job." Dale stared at the captain. "Do you begin to see what I'm getting at?"

"I think so," said John slowly. "I've heard the gossip and I know that you mean well, but aren't you going a little too far? After all I'm a grown man now, not a child, and I can learn to get along."

"So can a man with no legs learn to move around—after a fashion." Dale snubbed out his cigarette. "Listen, John, I'm not trying to frighten you, but try and step back and take a good look at yourself. At twelve, a nice formative age, you went to space school and by doing that you cut yourself off from all normal life. At twenty, the time of life when most men are married, thinking of getting married, or trying to find a girl to marry, you were passed out and given your own ship. You were on the routine cargo runs, a single man locked up in a metal shell from planetfall to planetfall. You never did anything else but press buttons, relax, and press buttons again when you'd arrived at Mars or Venus or back at Luna. At stop-overs you stayed in the pilot's quarters, took sunlamp treatment, ate in the mess, had physical check-ups, learned about the latest developments in space craft, and, if you could, chewed the fat with other pilots. Three days of that and off you went again for another three months of isolation in free fall." Dale pursed his lips. "I know all about the hormone treatments which diverted the natural survival instincts and I know all about the sedatives placed in your food."

"They did no harm—did they?"

"Depends on what you mean by 'harm.' Personally I consider the use of drugs to divert a man's natural interest in the opposite sex as playing with mental dynamite, but they did no physical harm if that's what's worrying you." He nodded at the captain's relieved expression. "I thought so, but my job isn't to worry about your physical health. I'm here to help you make the adjustments to civilian life as painless as possible."

"I hardly think that's necessary," said Williams coldly. "Must I remind you again that I'm a grown man?"

"You're a mental child," snapped Dale impatiently. "A clever, even brilliant, child, but still a child. What can you know of life? You've spent the past twenty years in greater isolation than a monk.

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You've been babied, looked after, told what to do and when to do it, fed and clothed and housed and sheltered. Instead of pay you received glory and instead of experience you received what other men would consider a form of distilled hell. You're big, yes, and you can talk, yes, and you can pilot a ship between the planets, but what good will that do you when you bump into reality? Get wise to yourself, John. Let us help you make the change."

"How can you help me?" For the first time Williams revealed the bitterness that was living inside of him. "The only thing I want is to go back to space, but they won't let me. They say that I'm too old. Too old at thirty-two! Damn it! I've got years ahead of me yet."

"You could remain fit and able to pilot for another ten or fifteen years," admitted Dale quietly. "And then what? Too old to make the change. Too old to marry and start a family and far too old to hope of settling down in a decent job. No, John. It's been left as late as we dare leave it. Longer and you'd be useless, your power to adjust will have atrophied beyond all use and you'll step straight from a space ship into an asylum. Now we can help you. Leave it until later and no one could help you."

"Help me?" John shook his head. "How?"

"Schooling in reverse. You'll go to a secluded camp and there you'll learn how to use money, how to make friends, how to mingle and adjust. Then, when you're firm on your own feet, you can face the world with confidence."

"And if I refuse?"

"You're free to go, as I told you, but I hope that you won't refuse." Dale shook his head. "Others have tried it on their own. Some make a go of it, others . . ."

"What of the others?"

"They can't take it, John. They can't face normal life and so they try to escape." The psychiatrist looked sick. "They do it the mental way, by running backwards down their mental time-track. They go back a few years—and find worries there also. So they go back to childhood, babyhood, back and back until, at the last, they are mere vegetables, mentally back to the pre-birth stage, unable to eat or see or hear or do anything but lie an inert lump of mindless flesh until they die."

"And you think that could happen to me?"

"It could, John. I hope that it doesn't, but it could." Dale stood up from behind the desk. "I know what's in your mind," he said evenly, "and there's nothing I can do to stop it, but remember this. If you ever need help come back here. Understand?"

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"Yes," said John, and smiled, and walked from the warm, snug office, from the fenced-in grounds of the spaceport, from all that had been his life from the age of twelve.

Into the great wide world.

He learned his first lesson on the bus which took him from the spaceport and dropped him in the centre of town. He had money, they had given it to him together with his civilian clothes and a holdall which held toilet articles and the few possessions he had managed to accumulate through the years, but he didn't think of it as *money*. He hadn't used or seen it for twenty years, and even before then, at the orphanage, he hadn't ever handled it. Equipment and training costs were too high for pilots to be well-paid or paid at all for that matter, and it served no useful purpose to let them worry over mundane things like wages or how much they were worth. A pilot was credited with a token sum which was immediately discounted for food and clothes, board and the few amusements provided. To John money was something quite new.

He stared blankly at the bus driver.

"Wassa matter, chum, fog-happy?" The man scowled at his hesitation. "Moola. Quick or get moving."

"Moola?"

"Dinero. Cash. Half a credit to town or walk."

"Sorry." John fumbled in his pocket and produced a mass of coins and crumpled bills. He felt like a fool. "Half a credit?"

"'sright." Irritably the driver selected a coin, and John wondered why he should appear so angry. "Sid-down."

That was the beginning.

To have to pay for everything was, in itself, shock enough, but he could get used to that. What he couldn't get used to was the invariable hostility, the impatience and outright rudeness of everyone with whom he came into contact. First the bus driver, then the waitress at a restaurant where he had eaten, a man from whom he had asked directions, a hotel clerk, the man who carried his holdall up to his room—he had been really offensive. Tiredly John slumped down on the sagging bed, so different to the firm bunk he was used to, and stared dispiritedly at a wall.

For the first time he admitted to himself that perhaps the psychiatrist had been right. The change was too great and, as an old man longs for the timelessness of his memories, so John longed for the neat and well-regulated life he had just left. He fought the feeling, knowing that he had to adjust or perish, and tried to settle in his mind the next steps of his adaption to a new world. He stiffened as he saw

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a spot on the wall—a spot which seemed to be moving even as he stared at it.

Tensely he rose and stepped forward, swallowing as he bent closer, then went rigid in sudden shocked loathing.

It was black and hairy, winged and with many legs. Movement convulsed it, the constant rubbing together of prehensile forelegs and shimmering wings warned that the thing could fly.

Vermin !

He supposed that he would have to get used to that too.

He registered for work the next day and, while they were sorting his application, wandered about the city with a vague idea that it would help him to adjust. It almost drove him crazy.

GET HEP WITH A HOP !

The magnified voice thundered in his ear as he was passing a tobacconist, and a simpering female puffed giant smoke rings from a twenty-foot cigarette. John stared at the tri-di moving image, wondering just why the female found it necessary to remove most of her clothing before sitting down to her obvious enjoyment of the cigarette. A man bumped into him as he stood and muttered something beneath his breath.

" I beg your pardon ?"

" Damn rubberneck ! I'm late as it is."

Another man bumped into the first and they swore at each other with mechanical bitterness. John took the opportunity to walk away.

SLOP SUDSY AND GET SET !

Another roaring voice. Another semi-nude female, this time grinning over the rim of a titanic glass and accompanied by flashes of light and puffs of coloured smoke. *DRINK THE BEST BEER BREWED* ! *DRINK* ! *DRINK* ! *DRINK* ! The huge voice swung into the chorus of the *Students' Drinking Song* and John winced as sound thundered against ears accustomed to the eternal silence of space. Still . . . The psychiatrist had said that everyone smoked and drank nowadays and, if he wanted to fully adjust and be normal, then he would have to smoke and drink, too.

Reluctantly he entered the bar.

The stuff tasted like stale water impregnated with bad air but, after the fifth glass, it somehow didn't seem quite as nauseating as it did at first. Manfully John puffed at a cigarette, trying not to cough and wishing that it didn't make him feel so sick. Perhaps there were other compensations, if sickness was the only reaction to smoking then why did so many people smoke ? He was still pondering the problem when the blonde joined him at the secluded table he had chosen.

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"Hi, buster! Buy a gal a drink, uh?"

"I beg your pardon?"

"Granted, but I'm thirsty and I'm strapped." She frowned at his blank expression. "Don't get me wrong, pal, this is strictly between friends. You good for a touch?"

"Thirsty?" He nodded at the familiar word. "Like a drink?"

"Listen to the man! Want a drink he says after I says I want a drink. Wet me pal before I crack."

"I'll wet you, honey." A gangling youth dressed in a vari-coloured suit, shoes with soles two inches thick, and trousers slashed to reveal rainbow socks, snapped his fingers and weaved to the tune of inaudible sound. "Get stomping, babe, I'm hot and humming."

"Beat it." She smiled at John. "I've no time for the zany crowd, no dinero and always acting the barnacle." She waved to the bartender. "Spill 'em, Joe, and turn on the jingle."

Dourly the bartender drew two glasses of foaming beer, sliced off the white suds, twisted savagely at a knob, and set down the glasses as the television sprang into discordant light and colour. "Fifty splinters."

"Pay the man, pal. Pay and play."

John didn't know how much fifty splinters was but he held out a handful of coins and watched as the bartender took half a credit. Now he knew what fifty splinters were.

Against the wall the full-length television screen bathed the tavern with glaring colour and a man, dressed similar to the gangling youth, simpered from the smooth surface.

"Sudsy gets you set, snips," he grinned. "Snuff Sudsy and soar skywards. Sail Saturn on Sudsy and stomp to Sim Sniff and his Sennets."

Behind him an orchestra struck up a jangling dissonance of brass and woodwind, scraped gut and percussion instruments while an invisible chorus chanted meaningless sounds.

Sudsy Sim!
Sudsy Sim!
Sim snuffed Sudsy
Stars snuffed Sim

"Super," said the blonde. "Sim sets me simmering. You smile Sim?"

"If you mean 'do I like Sim,' I don't really know yet."

"You a hopper, Hon?"

"Hopper?"

"Yup." The blonde dipped her face into the white suds. In the

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glaring light of the television screen John could see that beneath the thick layer of paint she wore she was still quite young. Twenty perhaps? Twenty-five? Eighteen? He didn't know and lacked the experience to make an intelligent guess. While the ridiculous figure of the boisterous Sim cavorted on the screen he lost the blonde's attention. She stared wide-eyed at the image of her hero, her feet tapping the floor, her fingers snapping, her full, over-painted lips trembling with emotion. The show lasted exactly six minutes then was replaced in a blare of trumpets by the animated figure of a kangaroo.

"*GET HEP WITH A HOP*!" Thundered a huge voice and the animal hopped aside to reveal a langorous female puffing gracefully on the slender tube. Again the discordant orchestra. Again the invisible chorus and the meaningless sounds.

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Hip, Hop, Hup !
Hop, Hup, Hep !
Helen Huffs Hops
Hops Hep Helen !

The chanting died and the langorous female smiled, delicately removed the cigarette holder from her lips, and stepped right out of character as she shouted a song.

Smoke, smoke, smoke that cigarette !
Smoke, smoke, smoke that cigarette !

" That's an oldie," murmured the blonde. She stared at John. " You hep, Helen ?"

" She looks a very attractive girl," he admitted cautiously. " A friend of yours ?"

" Could be." The girl picked up her empty glass and waved it at the bartender. " You seem out of character, hon. Girl stood you up ?"

" I haven't got a girl." Mechanically he paid for the drinks. " Are you ? I mean, would you . . ."

" Pair up with you ?" Boldly she looked him over. " Kinda old, ain't you ?"

" Old ?" The accusation hurt him more than he dared admit. " Of course I'm not old."

" Don't matter." She dismissed the question of his age with an easy flourish of her again-empty glass. " I'm free for fun for forty fractions. Let's yap."

" Yes." Again he felt a sense of utter confusion. What did she mean by ' forty fractions ' ? Was it just more of the strange language she seemed fond of using or did it have some financial significance like ' fifty splinters ' ? The drinks had made his head fuzzy and he drained his glass in an effort to restore his mental calm as he tried to find something to talk about.

" Have you ever been to Mars ?"

" Mars ?" She frowned thoughtfully, then shook her head. " Can't say that I have. I've been to the Saturn and I used to go to the Mercury before they raided it and shut it down. Some slime said she saw snow sold. Snuff !"

" No, I mean the planet Mars." He clutched desperately at his beer. " You should go there sometime. The canals are really extraordinary and the ice caps are said to be one of the most beautiful sights in the solar system, especially at dawn."

" Is that so ? I wouldn't know about that, but have you seen Slubsides ?" She whistled. " Now that's a show if you want a show that's a show that is. Three bands and a colour organ with scent-

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spray and feelies." She winked. "I know a feelie joint where you can get a real feelie if you want a feelie that's real."

"Really?" John didn't know what on earth she was talking about but tried to show interest. "Talking of shows, I once saw Venus in transit at the same time as Mercury. Now there's a sight for you. It can only happen once in a long while and I'm really glad that I was in space at the right time to see it."

"I saw a man walk a tight-rope over the Canyon once. And if you want a sight worth seeing you should try the Pits."

"Perhaps we could go there one day," suggested John, not knowing what the Pits were or what happened there. "Now when I was on my first flight the air-plant went bad and I . . ."

"Plant? I had a plant on me one time, the slime said I sniffed but I knew the right people and . . ."

". . . people like old Ginger who said that he was hit by a meteor and had to stick his finger . . ."

". . . finger, finger, fellow's got the finger . . ."

". . . the calculator wasn't working right and . . ."

". . . splinters, that's all . . ."

". . . space . . ."

". . . slime . . ."

After that everything began to spin and the girl's face seemed to be hovering against a panorama of hopping kangaroos and strangely dressed men with vacant faces and twitching fingers. Words droned around him but they were utterly senseless and he felt too ill to try and figure them out.

"Sam's sick send for a sled."

"Call a burner the guy's bust."

"Bust, hell! Looka da moola!"

"Hey! Watch it!"

Misery then and a confused impression of hands which lifted, pushed, probed and shoved, then finally a roaring darkness and a fervent wish that he were dead.

When he awoke he was in his hotel room and his helpers had gone. The blonde had gone. Everyone had gone—and so had his money.

The toboggan began to slide more swiftly after that carrying him faster and faster to the screaming pits of madness waiting below. Little things did it mostly, though the job they found for him, assembling parts on a moving conveyor belt, helped a lot. Things like the animosity of his workmates who distrusted a man who was always polite. Things like the man who smiled at him, bringing a sudden

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warmth of friendliness and then, when he tried to repeat the feeling by smiling at another man, earned him a punch in the mouth and an unfamiliar, though obviously foul name. Things like the shrieking advertisements which he couldn't understand and writhed in frustration because of that fact. Things like getting thrown out of his hotel because he couldn't pay his bill and having to wander the streets at night while waiting for his pay.

He almost starved before he found the relationship between income and expenditure and his clothing was in rags by the time he could afford a new suit. He hated the job he was in but didn't know how to get a better one and hated the men he worked with because he didn't know how to act when with them.

Women were a problem he didn't even try to solve.

The end came after an argument at work. John stood next to a big, husky, broad-faced man who had a perpetual grumble about the government and everything attached to it, and, needing friendship of any kind, tried to get it by agreeing with what the man said.

"If it wasn't for the government I wouldn't have to sweat my brains out working for a crust," said the man belligerently. "It's time we had a change."

"That's right," said John.

"What do you know about it?"

"I know that they're keeping us down, forcing us to do slave labour while the bosses take the profits." John felt quite safe in saying this, he was only repeating the big man's words.

"Yeah?"

"I'm with you when you say we need a change. It's time the workers came into their own and stopped the bosses using them for slave labour and snatching the bread from the mouths of our starving children."

"Is that so?" The big man scowled as he stared at John. "You trying to tell me that we should have a revolution or something?"

"Why not?" John frowned as he tried to remember what else the big man had said, then smiled as it came to him. "If we refused to work then they'd have to pay us a decent wage. United we stand, divided we fall, and it's time we united and showed the fat slobs where they got off."

"You dirty agitator!"

"What? But I'm with you. I only . . ."

"You trying to call me an agitator?" The big man doubled his fists and stepped forward. "Hey," he called to the others. "Slimy Sam here is calling me an Agi!"

"Squash the bum!"

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"Now wait a minute!" John swallowed as he backed away. He had never engaged in physical violence and felt an unreasoning fear as they gathered around him. "I didn't mean what I said." He pointed towards the big man. "I only repeated what he told me."

"You dirty liar!" The big man spat and lifted his fist. "You dirty, no-good bum! Coming in here and trying to cause trouble! I never did like you and now I know that I was right." He jerked his head towards the others. "What shall we do with the rat?"

"Smash him!"

"Kill him!"

"I . . ." John felt sick as he stared at their glowering faces and, driven by sheer desperation, turned to run.

That was his mistake.

After they had patched him up, dressed his wounds and paid him off, he sat down in a low-class diner and tried to imagine what he had done wrong. If he had disagreed with the big man he would have made an enemy. He had agreed and they had almost killed him. Why? He sighed as he thought about it, feeling again the blind, helpless frustration which was tearing at his mind. He looked up as a whining voice broke through his thoughts.

"Spare a coin, mister? Just the price of a meal for a starving man."

The beggar was old, dirty, dressed in rags and with a face ravaged by hunger and disease. John shuddered as he stared into the bleared eyes and hastily fumbled in his pockets.

"Here." He peeled a bill off the slender roll which was all the money he had. "Get yourself something to eat."

He sat for a while after the beggar had gone, reluctant to move, to have to make fresh decisions and to face the harsh world again, but it had to be done. For a moment he toyed with the idea of going back to the psychiatrist. What had Ember said? A wise man knows when he needs help and asks for it. A fool refuses to admit the fact. Was he being a fool?

He sighed as he stepped into the street and automatically headed down a narrow alley leading towards the centre of town and the employment registry. Maybe he was being a fool but he had his pride and hated the thought of going whining to a man he had once scorned. Maybe . . .

Darkness closed around him as a weighted club smashed against the back of his skull.

Dale Ember smiled as he stared at the man seated opposite to him across the desk and stared down at the dossier spread before him.

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"Well, John? You didn't make much of a success of it, did you?"

"I could have managed."

"Perhaps, but I'm inclined to think that if the police hadn't found you and brought you back to me you'd have shortly been found dead or insane." He pushed away the dossier and lit a cigarette. "Naturally we kept an eye on you and the police were warned what to do if you fell into their hands. Ready for rehabilitation now?"

"I suppose so." John winced as he felt his bruised skull. "But I still can't understand what happened. I did the best I could and still I didn't adjust. Why?"

"The gap is too big," explained Dale seriously. "I'd warned you but if I had gone into details you still wouldn't have believed me." He smiled. "As it is you were lucky at that. Everything happened so fast that you didn't have time to build up much of a repression and we can clear it without much trouble. The money angle is obvious, you must have worked that out for yourself, but are you clear on the other things?"

"Vermin," said John. "I never realised that insect life was still to be found in the towns and hotels."

"You wouldn't. Space ships are sterile and so are spaceports. They have to be, we can't risk the chance of upsetting a planet's ecology by the importation of alien life. Naturally, as you've been indoctrinated to those conditions, the insect affected you to an extreme degree."

"I understand that, but what about the language." He flushed at the memory. "I met a girl, in a tavern it was, and half the time I just couldn't understand a word of what she was talking about. The television screens too, they just didn't make sense."

"Alliterative slang." Dale shrugged as he crushed out his cigarette. "You know, in a way space travel causes a cessation of time. In that little world of yours you just don't know what is happening in the normal world. You don't even read the newspapers or magazines, have commercial radio or television, not even during stop-overs. In effect you've lived in a tight little box, frozen as things were a generation ago, while all round you things have moved forward. Language is a living thing, John, and slang is a part of it." He smiled. "You got mixed up with the zany crowd, the teenagers and old-time hepcats. They change their slang almost every year and the commercials cater to them in their advertising. I doubt if even I could really understand all their terms and expressions."

"And the fight at work? Why didn't those men like me?"

"Why should they? You were different, and the normal man hates anything different. You must realise, John, that what you mistook

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for impatience and aggressiveness is the normal standard of behaviour. People are impatient, why not ? They know it all and consider that you, as an adult, should know it too. The aggressiveness, of course, existed only in your mind. I warned you that you had been nursed for too long."

" But the fight ? I only agreed with what the man said."

" And so did the wrong thing. That man had an escape valve—he talked. But he didn't have to really believe in what he said. Opposition was normal to him, he welcomed it, and fought verbal instead of physical battles and so gained psychological relief. You inflamed his dislike of you by mocking him, or so he thought, or perhaps he may have really believed that you were an agitator. It doesn't matter, the results would have been the same in either case."

" And the beggar ?"

" Show a starving man money and you beg for trouble." Dale rose and smiled down at his visitor. " Well, John ? Ready to go to school?"

John nodded.

E. C. Tubb

Nova Novels

Our apologies to all those readers who enquired at their bookstall for the first two titles in this series—*The Weapon Shops Of Isher* and *The City In The Sea*—scheduled for distribution at the same time as *New Worlds* No. 31, only to be informed that they were " not yet published."

To obtain maximum distributive results throughout the country publication was delayed one month. Both titles are now on sale (see inside back cover for the distinctive jackets to look for at your usual retailer).

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Science fiction writers who have a penchant for using death-rays in their stories—and would-be authors also—will doubtless find John Newman's current article of inestimable value. The chances are apparently very small that a workable death-ray will ever be useable.

ULTRASONICS

By John Newman

Should you ever want to drill a square hole, search for minerals lying several miles underground or seek a sunken treasure ship it is probable, if not certain, that you will turn to the science of ultrasonics. For these are just a few of the many new jobs being found for this comparatively modern science; its scope is so large that its possibilities are almost unlimited.

Ultrasonics—sound waves vibrating much faster than the ordinary, audible waves that we hear—have many peculiar properties, especially at high frequencies, that are now being used in research and industry. One of their not so useful properties is their ability to form a beam of 'death rays,' literally shaking the body cells to pieces and cooking the brain in its own juices. But, unfortunately for science fiction authors, the ultrasonic frequencies that do this are only transmitted a few feet in air; small animals about two feet away from expensive, precision-built ultrasonic sirens can be killed in several minutes. If an author can induce his victim to step into a bath of oil or water, both good conductors of ultrasonics, he can then proceed to ray him to death by causing an artificial fever. Assuming, of course, that the victim doesn't climb out and walk away before the beam takes effect.

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Humans can usually hear sound waves from a frequency of 20 to 20,000 cycles a second, although 'silent' whistles, which can be heard by dogs, produce frequencies above this. Bats use the reflection of still higher frequencies, made by squeaking, as an acoustic form of radar. Scientists are now working with crystals that generate ultrasonic waves at 500 million cycles a second and plan to extend their work further along the sonic spectrum. Sound waves above the audible used to be called supersonic but this term is now used to describe speeds that are faster than sound and the older term has been replaced by ultrasonic, just as light above the visible is called ultraviolet.

There is no abrupt change from audible to ultrasonic; silent waves at 25,000 cycles a second have very similar properties to those that we hear at 15,000 cycles. However, increasing the frequency automatically decreases the wavelength of the waves and it is their minute size, down to a forty thousandth of an inch at high frequencies, that makes them so useful.

Ultrasonics, like electricity, are useful in that they can carry information or energy and can pass through metals and liquids. But, unlike light and radio waves, they must have some material to transmit them; a vacuum stops them dead. They can pass through all elastic materials (metals are elastic), even those that are opaque to everything else except X-rays. They can also be easily beamed and transmitted over long distances in the sea.

There are three types of ultrasonic wave motion but only one, the longitudinal type, is of any importance and it is the only one of which practical use is made. Matter-carrying longitudinal waves acts like a spiral spring, vibrating backwards and forwards parallel to the direction of the waves. The second type is similar to the wave motion passing along a piece of rope that has been shaken, whilst the third type only travels on a surface, like waves on the sea.

Ultrasonics cause atoms to rapidly vibrate backwards and forwards and, because of this, they are used to shake large drops of liquids to pieces. The acceleration acting on the particles as they stop and start is equivalent to 100,000 gravities and even mercury, which normally forms a separate layer under other liquids, is forced to form an emulsion with water. Hair cream is produced when liquid paraffin and water flow through a tube in the field of an ultrasonic generator. Metal alloys are being made with a very small grain size by treating the molten mixture with ultrasonics as it cools. The vibration stops the usual crystals from growing very large and the result is a fifteen per cent increase in strength. This method is used to improve the casting of the high tensile alloys of which gas turbine blades are made.

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Lower frequency ultrasonics have an opposite effect to this in air; they cause dust and fog particles to collide and stick together. The large particles separate more easily and this is now being used on a large scale to prevent valuable or unpleasant dust escaping into the atmosphere.

Heating also causes an increase in the vibration of atoms and it would be expected that ultrasonics would have similar effects to heat. This is so, for ultrasonics speed up chemical reactions and breakdown complex molecules, such as starch, as if they had been heated. So far, the chemical effects of ultrasonics have been little explored and, unlike other industries, the chemical industry makes no large scale production use of it.

When a material absorbs ultrasonics the energy is converted into heat and this can be used for internal heating. As they are absorbed by flesh they are used to relieve rheumatic pain by direct warming of the tissue.

Ultrasonics cannot be heard and require no wires so there have been many attempts to use airborne ultrasonics for military signalling. All such attempts were doomed to failure—transmission of ultrasonics in air is affected by wind, the temperature and the amount of moisture present in the air. They can only be made to penetrate 1,000 feet of air, even by using a frequency as low as 20,000 cycles a second and by concentrating the energy by means of parabolic reflectors. Raising the frequency to 30,000 cycles a second cuts the penetration to a half; the general rule is, the higher the frequency the greater the absorption.

A dynamite explosion excites a large range of sonic and ultrasonic frequencies and the latter are reflected and refracted by stratas of dense and light minerals under the Earth's surface. Geologists, by exploding a charge of dynamite and picking up these waves on instruments some way away from the explosion, are able to get a rough idea of the types and thicknesses of the different layers of rock under the surface.

A new process for drilling and machining hard materials has been developed using ultrasonics. It is, in effect, a reciprocating drill with a soft metal tool which is fed with abrasive powder. This is vibrated by an ultrasonic generator and the powder, which becomes embedded in the soft metal, does the actual cutting. As the tool doesn't rotate there are no limits to the shape of the hole, it can be triangular, square or as complex as you like. This is being increasingly used in industry, particularly for machining metal carbides such as tungsten carbide and for quartz, brittle metals and ceramics, none of which are easy to deal with. This method has the advantage of causing little rise in temperature in the work. Fitted with a thin saw blade, it can also be made to cut and saw.

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A painless ultrasonic drill is now used by dentists, for most of the pain accompanying the " stopping " of a tooth is the result of the heat produced during the drilling.

The early techniques of producing ultrasonics were pretty crude, relying on methods similar to those used for audible sound, sirens, whistles and tuning forks. It was not until electronic gadgets were developed, capable of giving high intensities over a wide range of frequencies, that their widespread possibilities were first realised. The most widely used generators employ magnetostrictors for low frequencies and crystal transducers for high frequencies.

Magnetostrictor generators are used up to 60,000 cycles a second, they combining the virtues of high power output and, because of their all metal construction, great strength and resistance to breakage. Their main disadvantage is that their efficiency drops when they get hot. The principle on which they work is a little known effect of magnetic fields on metals. Some alloys, such as nickel with iron or copper, change their length when placed in a magnetic field. If a bar of such an alloy is placed inside a coil of wire through which passes an A.C. current, then a rapidly changing magnetic field is formed inside the bar. This causes the bar to expand and contract and so vibrate at the frequency of the A.C. current in the coil.

If the bar of alloy is fixed to a metal disc and then vibrated at a high enough frequency it produces ultrasonic waves. A large number of such rods are usually connected to one diaphragm when large power outputs are wanted. The whole set-up is cheap, sturdy and capable of giving plenty of power at low frequencies.

The opposite effect is used as a detector; the vibration of an alloy bar in a coil causes an A.C. current which can be amplified and measured.

It is this type of generator and receiver which is used for low frequency SONAR, the name given to ultrasonic underwater signalling systems. Ultrasonics easily pass through water and a beamed signal can be detected ten miles away. Sonar is the underwater equivalent of radar but it is not so reliable or effective, having a much shorter range. Both sonar and radar work on the same principle of reflected pulses. Sonar uses a pulse of 600 watts of power at 25,000 cycles for a tenth of a second in every two seconds. The time taken for a reflection to return is measured.

Knowing this and the speed of sound in water it is simple to obtain the distance of the object which caused the echo. The time interval was measured by mechanical means during the first World War but nowadays this is usually done using electronic methods, such as a

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trace on a cathode ray oscilloscope. An added advantage of the pulse method is that the generator can be used as the receiver, the recording unit being triggered not to operate whilst the very high power of the pulse is being broadcast.

Sonar is used for echo sounding to find the depth of water under a ship, for charting the position of wrecks on the sea bed, as a submarine detector and by fishermen, to find shoals of fish.

Very much higher ultrasonic frequencies can be obtained using the piezo-electric effect. This depends on the expansion that occurs when an electric voltage is applied to the surfaces of particular crystals. If a varying voltage is used, the crystal vibrates and sends out ultrasonic waves into whatever it is touching. When such a crystal is mechanically vibrated it produces electric charges which can be measured. A crude type of this generator was developed in the first World War but never reached the stage of being used against U-boats. It is now used for a lot of sonar signalling, both of the echo type where great selectivity is needed and for carrier beams which can be modulated to carry speech from one ship to another.

Quartz crystals are normally used, although one recent development has been the use of ceramic materials, such as barium titanate, as the piezo-electric core. These ceramic materials contain a large number of tiny crystals and are made by heating the powder to 1300 C., cooling and polarising the crystals under a high voltage for several hours at 140°C. They have many advantages over single crystals; they are much stronger, are unaffected by moisture, are easy to mold into complex shapes and will work at temperatures up to 110°C.

The crystals normally used are cut from artificially grown quartz crystals, of which 30 million a year are grown in the U.S.A. They are not easily corroded but can be easily cracked and chipped, so the thin plates used have to be carefully polished, electroplated and stuck on to metal electrodes. The ultrasonic frequency produced by the crystal plate depends on its thickness but it is unaffected by the plates' area or by temperatures below 300 C.

These crystals are normally used from 200,000 to 15 million cycles a second but, when vibrating at a harmonic, they can give frequencies many times higher. The power output of a single crystal is limited to about 200 watts so, for higher power generators, the crystals must be fixed together in the form of mosaics or piles. The voltage across the faces of the crystal is produced by a powerful radio transmitter giving several thousand volts and any radio set, with a crystal in place of the aerial, can be rigged up to act as a receiver.

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It is the piezo-electric crystal that makes ultrasonics so useful. The very small waves that they produce can be used to find tiny cracks and flaws in metal by a method similar to sonar. It is simpler and safer than X-rays, giving an immediate reading, and the thickness of the metal does not interfere with the accuracy. The crack reflects part of the wave back before the reflection from the far side of the metal is received.

Ultrasonics cannot be focussed by lenses of glass, plastic or metal but they can be concentrated by a parabolic reflector or by using a curved crystal generator.

Ultrasonic delay lines are used for the temporary storage of information in electronic computers. The electrical impulses containing the information are converted into ultrasonics by one crystal, passed through a length of metal and picked up and reconverted by another crystal. As ultrasonics travel slowly in comparison with electromagnetic waves, the information is 'stored' in the metal for a finite length of time. About one million items can be handled every second by such a system. Tubes of mercury used to be used but it has been found that bars of magnesium give excellent results.

Ultrasonics show startling characteristics in liquids. A crystal under the surface will shoot a jet of liquid several feet into the air and apparently cause bubbles to form. These are points at which the waves are strongest and are due to dissolved air expanding and collapsing under the vibration. Particles near these bubbles are shaken into pieces, paint pigments are broken down, dirt is shaken out of clothes, grease removed from metal and fish and frogs killed.

Bacteria and microbes are destroyed but it is impossible to sterilize liquids by using ultrasonics alone, as the lethal effect depends on the *chance* of finding a bacterium at one of the bubbles. Ultrasonic soldering irons and solder baths are already in use in industry, the vibration shaking grease off and cleaning the surfaces so that the solder forms a strong joint.

In the future there will be considerable development of ultrasonics for sonar, cleaning and flaw detecting but the greatest developments will undoubtedly be in fields, particularly the chemical industry, which have yet to be explored. Instead of being stored for years to improve their flavour, wines and spirits will be artificially 'aged' in a few minutes by ultrasonics and surgery will be advanced by the use of ultrasonic scalpels which will coagulate blood as they cut.

John Newman

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Thwarted at every Alister turn by the ever-increasing mystery of his own identity, Alister Conrad finds the long trail in search of the elusive telepath de Lamiter leads to the Earth colony on the Moon, where the final pieces of the complex jigsaw fit snugly into place.

PRISONER IN THE SKULL

By Charles Dye

Illustrated by QUINN

Conclusion

FOREWORD

Alister Conrad is a man without memories of his early life. He recovers consciousness in a New Jersey wood, apparently suffering from head wounds sustained on a hunting trip, to find that he is President of Sleep Tanks, Inc., a New Jersey company which manufactures caskets for people to lie in suspended animation until pre-selected dates; that he has an apartment in Manhattan; a wife named Laura.

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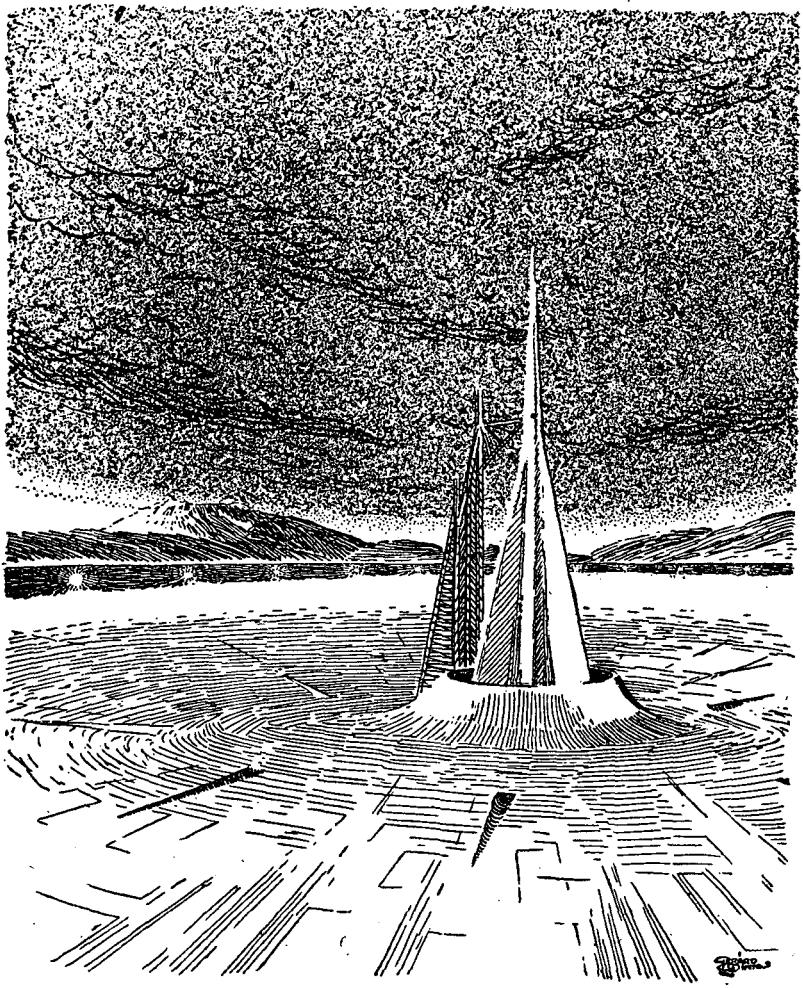

Hungry, bewildered and sick, he is picked up by a police heliojet patrol as a suspected imposter of the real Conrad, but they prove he is not. Meanwhile, upon hearing his voice on the TV-phone, his wife disappears without trace. He is sent for by the beautiful Dr. Val von Rachin, Directress of World Education at Unesco Headquarters and subjected to

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a hypnotic impulse to find and kill the Earth's only known telepath, a French-Canadian named Rene de Lamiter, who is suspected of having taken refuge in a sleep-tank.

Conrad engages a private detective named Kyle to find his wife and then meets April Jordan, an acquaintance of his earlier life, after having been attacked in his office at Sleep Tanks while trying to trace records of de Lamiter. Quarrelling with April he is picked up by an obnoxious character named Hypo Ned who drugs him and alters the retina pattern of his eyesight. Recovering consciousness in his own apartment he tries contacting Kyle but fails to find him. He decides to call upon April Jordan, who, together with Roderik Niles, his wife's brother, kidnap him, but he manages to escape and again returns to his office.

This time he discovers a secret vault behind his wall-safe with a sleep-tank casket inside together with two private ledger-files, one marked De Lamiter *the other* Alfred Drake. *While there he is attacked but overpowers a night-watchman named Markham and leaves him bound and gagged in the secret vault. Contacting Kyle by TV-phone the two are talking when Kyle is killed, and upon reaching Kyle's apartment Conrad catches a glimpse of a woman he thinks is his wife Laura before being stun-gunned. Upon recovering he makes for April Jordan's apartment only to find her also dead.*

Mentally trying to fit the pieces of the jigsaw together Conrad returns to his Sleep Tanks office only to find that Markham has apparently disappeared from the vault, but a more careful search reveals the man at the bottom of a secret tunnel leading under the grounds. He dies as Conrad reaches him. Thinking that de Lamiter is in the hidden sleep-tank he opens it but finds the casket empty.

His office phone relays a message from von Rachin saying that she has gone to the Moon and instructs him to follow immediately. Before reaching the space field he has two more brushes with unknown assailants but manages to escape. He decides to wait at Alfred Drake's apartment until it is time for the ship to take off—and at the same time do a little investigating of the elusive man about whom he has a private ledger. There is obviously some connection between Drake and de Lamiter. But what?

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XV

The jet whirred down to the taxi strip and he took over manually, manoeuvring it along on a single blast from the tailpipe into a large parking igloo. An attendant held out a ticket ready to be punched.

"How long do you intend to be gone, sir?"

"Maybe forever."

"Pardon?"

Conrad caught himself and said a month.

"May I see your credit card?"

He handed it to him and he punched the card and ticket together.

Conrad took back his card along with the parking stub and walked out to the moving sidewalk travelling to the reception building. The building was the most startling he had ever seen. An inverted spiralling tower of Babel constructed of glass, transparent plastic, and a silvery metal the colour of starlight.

The sonics had cleared up the weather over the field, but farther up, the overcast itself was breaking and clearing away. Shifting star patches twinkled down on the lucite tube through which he was riding.

Undercurrents of excitement were in the many voices behind and in front of him. Little groups of happy awe-filled people, all giving the impression that this was their first trip to the Moon. Maybe it seemed that way every time, no matter how often you went. Conrad couldn't think of a greater adventure—except, possibly, the one he had just been through.

The spaceship was still hidden by the reception building, but the control blockhouses stood out on the south side of the field like white lumps of sugar. Somewhere, a warning siren screamed three times.

The sidewalk half-circled the tower's base, then inclined flexibly as the tube spiralled upwards, around and around in ever widening circles. The view of the field was throat-catching. It was like looking down on an antique silver dollar five thousand yards in diameter. The metal recoil plates covering the field so extravagantly were as much there for beauty as for function.

In the centre of the silver circle, and still surrounded by spidery fuelling towers, stood the spaceship *Willy Ley*. A shining needle bathed in light from a hundred floods. One thousand feet of the greatest thing ever created by man, pointing upwards to the stars.

He was suddenly off the walk and inside the transparent circumference of the huge reception room. The lighting had a deliberately low, off-key effect to throw the vision out into the panorama of the

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space field. He felt as if he were walking on clouds, even after looking down and seeing that it was only a carpet of midnight blue.

A smiling woman with a voice soft as night checked his reservation, then punched his credit card for a sum almost as high as the Moon itself.

As he strolled away from the reservation bar, a strain from the *Prelude to the Stars* theme came drifting out of nowhere, filling the room with a tingling grandeur. He felt almost capable of floating to the moon.

A gong sounded once, twice—and a quiet voice announced fifteen minutes to departure time. Conrad decided he still had time to go to the men's lounge and get rid of some of the grime on his clothes and hands. That was his fatal mistake.

He was picked up just outside of the entrance.

"One word out of you," a harsh voice whispered, "and I'll put my foot down your throat and pull you up like a boot."

He felt something sharp in his back—he kept walking. "Is that the only language you hoodlums know?" The calmness of his voice surprised him. But he couldn't lose, now, *he just couldn't!*

Inside the lounge a tough looking character was standing at the toilet entrance mumbling something and shooing away late-comers.

"Okay, Lou," the man behind Conrad said softly, "keep standing watch. I'll be out in a minute."

They walked around a bend, through a heavy door of silvered oak and into the onyx-tiled lavatory. The valet was nowhere in sight. If Conrad were stungunned now, he would never make the ship. His heart pounded and his stomach quivered.

"Down to the last booth, now open the door and sit down."

Conrad stepped through, held his breath, and slammed the door right on the man's gun hand. Simultaneously he jammed his body against the door and used both hands to jerk loose the gun.

There was a howl of pain from the other side as the man tried to withdraw his hand. Conrad jumped up on the commode, fortunately the seat was down, and when he came charging through, pressed the stud . . .

He dropped just as Lou came tearing through the lavatory doorway.

"What's—" He didn't finish.

Conrad, still on the commode and aiming over the booths, had hit him. He jumped down, pulled the man at his feet all the way inside and propped him up on the commode, then locked the door from the inside. After crawling out under the door, he hurried down to Lou and repeated the process in another booth.

Conrad smoothed down his clothing, took several deep lungfuls of

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air, and tried to seem casual as he walked through the outside lounge and into the reception room. The area around the lounge entrance was deserted. Everybody who wasn't going to the Moon was on the far side of the room gazing out at the final blast-off preparations.

His heart almost stopped. He hadn't made it. The passenger lift down to the field, which had been in the centre of the floor was now gone.

" Five minutes to blast-off. Listen for the count."

Five minutes to get down from here and across one thousand yards of field . . .

As if by magic, the passenger lift suddenly appeared back in the centre of the floor. He dashed over to it and hammered on the semi-opaque doors when they didn't open. The operator opened the doors a crack and stuck his head out. Conrad charged through without waiting for him to remove his head.

The operator regained his equilibrium and said in an angry voice, " I'm sorry sir—the field is secured until after blast-off !"

Conrad didn't waste words. He pulled out his newly acquired stun-gun and put the operator to sleep, then stamped on the descent pedal. The lift went down with a nerve shattering slowness, and he was damp with perspiration before it stopped at the bottom.

He slammed out of the lift and found himself on the field ferrying ramp, deserted and empty with not a vehicle in sight. His watch said three minutes to go.

He started running across the metal field. Three minutes to run over half a mile. He knew he would never make it—still he kept running.

A third of the way across, he met the ferrying limousine on its way back from the ship. He continued running—directly into its path until it came to a screeching halt ten yards in front of him.

He waved the gun in the driver's face and told him where-to, then jumped in beside him. Conrad could see a hole of blue light high up in the ship's gleaming side. The airlock was still open. All servicing towers had been pulled off to one side of the field. Only the ship, pointing up to the stars like a gigantic finger, remained.

Conrad was half out of the limousine as it came to a skidding stop below one razor-sharp atmosphere fin, then he was running under and around to the airlock side.

One minute to go . . .

The hydraulic skeleton-lift was already telescoping up into the open lock. Conrad yelled and yelled—but no one appeared in the hole of blue radiance. The last of the lift disappeared and the airlock closed shut. The *Willy Ley* was utterly silent.

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He wasn't going to the Moon after all.

He would have to stay on Earth and be forever on the run until, one day, de Lamiter caught up with him.

Suddenly a giant red star-flare arced over from the control block-houses and burst above the nose of the ship. Tiny fire-stars drifted down like red popcorn. A siren shrilled and a long black hulk, with headlights blazing, came racing out from the ferry ramp.

Coming out to remove him from the field, Conrad thought. The limousine he had come in had already disappeared back across the field. He put away the stungun and walked out to meet the oncoming vehicle. But it went tearing on right by him. He stood there a moment, watching it rush away from him—then he almost jumped. The *Willy Ley's* airlock had spun open and the skeleton lift was being lowered back down to the field.

Conrad sprinted the distance back to the ship, and reached there just as a man with a folder under his arm was stepping onto the lift-platform.

"Hurry up, Halstead. This is your last chance to make it!" the man yelled good-humouredly.

"Thanks," was all Conrad managed to get out between breaths as he jumped up on the platform beside the man.

The man reached into his folder and handed Conrad a sheet of paper. "Here—you can sign yours now."

The light wasn't quite strong enough to read by. "Sign what?"

"Sign the reason you made the ship," he said chuckling. "If the order hadn't come through to get these signed, there wouldn't be this twenty minute blast-off delay, and you would probably be carried off the field either as a cinder or a man in a strait-jacket."

The lift started to creep slowly up the gleaming flank of the ship.

"Don't worry," the man continued, "that's only a waiver relieving us of responsibility in case you get indefinitely stuck on the Moon. Political conditions up there, you know . . . Can't tell when all passenger runs will be forced down. And for the rest of the month, because of those damn magnetic power experiments, we won't be able to get anything through the Heavyside layer smaller than a spaceship."

The lift reached the top and they stepped from the platform into the blue radiance of the airlock. Conrad glanced back over his shoulder. It was like looking down from a skyscraper onto a huge circular street of silver.

One of the crew of four in a skin-tight space uniform of black was standing by to help them through the rear of the lock and into the companionway.

"Here's your missing fare," the man with Conrad said.

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All fifty passengers had been routed out of their shock-cells and were waiting in the companionway for the waivers. Helpman, as he had been addressed by the crew member, hurriedly passed out the sheets of paper, explaining what they were as he went.

Nearly all of the passengers were Moon technicians or scientists returning there after business or vacations on Earth. After a minimum of grumbling, all waivers were signed and returned to Helpman.

Conrad borrowed a jet-point from someone and signed his. Helpman gathered them all into his folder and hopped into the airlock, pausing long enough to wish a *bon voyage*. Then the inner lock closed, the passengers went back to their shock-cells, and the crewman, who was also the purser, motioned to Conrad.

"I understand you're travelling under an alias, sir," he said in a quiet voice. A small desk and file folded out from the companionway bulkhead beside him.

The reservation clerk had made note of his credit card after all, Conrad realised.

"May I see your credit card?"

Conrad watched him check it carefully against a microfilm sheet of reservation notes he had inserted in the desk viewer. He made several notations in a log, including the retina number, then handed Conrad back his card.

"Thank you, Mr. Halstead. Everything is in order now." Before folding away his desk, he handed Conrad a small India-paper map of the Moon. "Since this is your first trip, sir, this may help to amuse you once we get in space. . . . And now I'll show you to your cell—we blast off in three minutes."

Conrad followed him to the end of the companionway and then down a circular staircase. All along the way they passed closed doors with numbers on them. Cell 49, Conrad's cell, was almost at the very bottom.

"There is an instruction and orientation sheet on the inside of your door. Once inside, close your door. It will automatically lock. We cannot blast-off until all doors are closed. The control room will automatically open them once we're in free-flight."

He held the door open and Conrad ducked through. "See you down in the lounge in a few minutes, sir."

Conrad turned around, but the door had been silently closed.

Padded cell would have been a much better term than shock-cell. Except for a small square of light coming from a combination ventilator-illuminator unit in what was currently the ceiling, the whole cell was padded with green sponge rubber. He had barely time to note the form-fitting shock mattress before the light started blinking on and off.

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He looked up. The square of radiance had turned into a sign : LIE DOWN. He lay down on the mattress on his back, the only way it would fit properly, and the blinking sign again became a steady block of light.

Suddenly a dull boom came from somewhere and a faint tremor ran through the ship. The tremor seemed to dissolve into a low hum, then he felt himself being pressed gently down into the liquid-filled mattress. In a single instant the whine, cutting through the sound-proofing like a knife, jumped up to an ear-piercing scream.

Something tried to ram him through the shock mattress—inertia, his own, at four times his normal weight. Six hundred pounds sitting on his chest, pinning his arms . . . legs . . . His breath came in gasps . . . the whine . . . inside his head . . . everything turning grey . . . sick.

Then it was over. Towards the end he had greyed-out. He raised up on one elbow and continued raising—right up to what had been the ceiling. The padding gently bounced him back to the mattress. He tried to get into a sitting position, but accidentally kicked the mattress. This sent him off in another direction. So this was free-flight. He felt more like a billiard ball on a four-cushion shot.

He finally managed to grasp the mattress and come to rest in a sitting position. The information sheet on the door caught his eye. Only it was labelled Predicament Sheet, and more cleverly written than informative. Right now he was experiencing No. 4.

Please be warned—By a helmet be adorned—
Out here a little gravity is like a little pregnancy—
There ain't no such !

At the bottom of the sheet there was a brief nomenclature of the ship and shock-cell, showing the only cell storage space to be under the mattress. He bent back the end away from the wall and held it there until the storage lid flipped up from the locker.

Inside, the few articles were held in place by small magnets—a comb under the lid mirror, two dozen plastic disposal tubes, a coiled flexible drinking tube with a valve at the end of the mouthpiece, and a transparent crash-helmet. Also space for twenty-five pounds of personal baggage.

He put on the helmet, stuck the drinking tube in his pocket, and pressed down the storage lid. The mattress flopping back down brushed his knee and he went floating over to the door. It opened and he drifted out into the circular stairwell.

Grasping the thin railing he gave himself a slight pull-push, keeping his hand loose around the railing for guidance, and went curving down

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what had been down the stairs. Several other people were drifting in a similar fashion behind him.

The stairs wound right down into the centre of the lounge, a circular room comprising a cross-section of the ship. It was also the dining-room. One long counter, curving like a half-moon, and fifty magnetized chairs covered a third of the space. Except where the chairs were, the floor covering was a black spongy plastic. A silver ceiling and walls complemented it. Nearly everybody was already in the lounge, and a few were standing in front of several of the fifteen port-holes that lined the room.

After three clumsy attempts, which brought smiles from those who noticed, Conrad managed to drift over to a vacant port without banging his head on the ceiling and floor.

Cold, hard, blackness stared in at him—and a tremor ran down his back. The vacuum that was space, instead of being dimensional, seemed to possess no dimensions and unlimited dimensions—all simultaneously. He had the uncanny feeling that if he stared long enough, his vision, like a beam of light, would travel clear around the universe. The stars had turned from twinkling silver into great flaring torches of flame-coloured light. The whole of Creation was burning up with cosmic fire surrounded only by the black silence of space.

To his right was the Moon, a great round ball. It floated farther to the right as the ship headed for the position it would occupy one day later. Coming out from behind the ship, far down to the left, was a curiously flat platter of blue and green and white which he recognized as Earth. The continents and oceans partially obscured by clouds gave it an unfinished jigsaw puzzle look.

Over everything, arching across the interstellar night, was the Milky Way pulsing and throbbing light energy through the vast empty spaces between stars.

Conrad floated away from the port like a man in a dream. It was worth everything he had gone through to be out here. Before he knew it, his reveries had drifted him right into the buttocks of the purser who was now acting as steward. Conrad hung in mid-air while the steward, like a man in slow-motion, fell down to the floor. The two men he had been talking to laughed and cracked a joke as he bounced back up.

The steward smiled up at Conrad. " Still getting the feel of things, Mr. Halstead ?"

They all laughed and Conrad apologized. The purser-steward, whose name was Rhodes, introduced Conrad and said, " Why don't you two gentlemen float Mr. Halstead over to a table and teach him how to eat ?"

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Conrad wasn't hungry and declined the offer, drifting back to the port to drink in more of the light of the galaxy.

A strange lethargy sank over him. There were periods when his mind seemed to blank out, allowing a little bit of the emptiness of space to creep in. His eyes became a burning-glass, focusing and magnifying the stars, trying to trap them all into the net of his subconscious. Only vaguely was he aware of the low murmur of voices behind him. He closed his eyes—the voices faded away—he was drifting off into space . . .

Six hours later, he woke. He was still in front of the port, but hanging six inches off the floor.

Far below, the sun setting off the west coast of Northern America was streaking the western hemisphere with light the colour of molten gold.

Rhodes drifted over to him. "Too bad one can't live on that alone," he said, staring out at the glistening pool of stars. "Luncheon is being served. Can I move a counter section over to the view here for you?"

This time Conrad was hungry for more than just stars. He nodded.

The magnetic counter section clamped to the bulkhead just under the rim of the port, magnetic chair on the floor in front of it. He sat down and fastened the safety belt. Everything was in containers—three labelled boxes all warm to the touch. One was coffee—the second, steak cubes and French fried onions—the third, buttered string beans—all food that could be speared safely and carried to the mouth without danger of spillage.

He removed his drinking tube and pushed it into the trap of the coffee container. When he wasn't sucking, a spring closed the mouthpiece valve. The coffee was hot and delicious with a touch of cream and sugar. He picked up the magnetized fork and stabbed some steak and onions.

When he finished he unsnapped the chair belt and floated right up to the ceiling before getting his reflexes under the proper control to head him to the men's room.

Down another spiral stairwell he floated, until he was under the deck of the lounge. The men's room, in comparison with the lounge, was the size of a t-v booth. There was no running water. The soap and depilatory cream were in the form of a heavy goo which had to be wiped off the face and hands with rough fiber towels. But they accomplished their purpose. Brushing his clothing was another matter. There was a sign up warning against lint and dust being released while free-flight. He had to locate and use a static-vacuum brush.

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Then he floated back upstairs again. To do some more star-gazing. And later, when they approached the hump—the equality line of gravitational attraction between Earth and Moon—he saw the sister ship of the *Willy Ley*, the *Arthur C. Clarke*, pass silently by, a long silver icicle, heading to Mother Earth.

Before the Moon completely disappeared behind the front of the ship, he got out the Moon map. Faint Earth light shadowing one half of the Moon, contrasted sharply with the other half illuminated by brilliant hard sunlight. He recognised the great lunar plain, *Mare Imbrium*, the Apennine Mountains, a great barrier six hundred and forty miles long and twenty-one thousand feet high, stretched diagonally across the Moon's pock-marked face, throwing sharp, choppy shadows towards Archimedes, a lunar crater fifty miles in diameter.

Far up against the Great Wall, a gigantic natural fault seventy-five miles in length, he could pick out the domes and towers of Galileo, the Moon Port to which they were headed. And on top of the Wall, the skyscraper lunar observatory housing the old Palomar two-hundred inch telescope, the largest ever built. Somewhere around on the Moon's other side, in the darkness, were the nuclear laboratories and construction yards of the giant starship *Relativity*.

XVI

Silence . . . The two-mile-per-second striking velocity had been reduced to zero by the rocket motors and the *Willy Ley* rested on the recoil platform of the Moonport Galileo.

The cell door swung open automatically and Conrad stood up from the shock mattress and glided out of the door. Moon gravity, one-sixth that of Earth, had cut his weight down to twenty-five pounds. Circling up the stairway was accomplished in three leaps. He bounced into the companionway and cracked his head on the roof before coming to rest in front of the airlock. Someone laughed and he noticed that he was still wearing the crash helmet. He took it off and handed it to Rhodes, who was standing beside the lock to make sure no parts of the spaceship left with the passengers.

An insulated plastic tube had been elevated and connected with the outer airlock. Escalator stairs went stepping through the tube down to a hole of brilliant light at the bottom. He stepped on, and half-rode, half-walked through the tube's smooth interior, until he step-slid out into a blaze of the Galileo reception room.

One half of the room, jutting out from under the recoil platform and constructed of glass brick, let in creamy sheets of light from the long two-week Lunar day. No other illumination was needed.

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He glided through a milling throng of fifty more passengers waiting for the escalator to reverse and carry them up to the ship, and finally spotted the information booth.

"Where can I find Doctor Val von Rachin?"

The booth was an automatic sonic card-index reply type. There was no buzzing or whirring of gears, only a soft click as the small card slid out the answer slot: Dr. von Rachin, *Mare Nubium* (Cloudy Sea) At End Of Railroad.

Conrad located the cocktail lounge, then over a drink and several inquiries, learned that the Mare Nubium was the Moon's only hotel. It was situated up the Great Wall at the end of the jet capsule run known as the Railroad, offering a spectacular view of *Mare Nubium*.

He went to the rear of reception and waited for the capsule to return from its run up the Great Wall.

Finally an airlock opened and he, along with four others, stepped from the room into the jet, a transparent insulated capsule capable of carrying fifty. The ride up the Great Wall was of sky-rocket swiftness. Only once did the Railroad make a stop—at the Lunar Observatories to let out the four men. Then on up and out to a seven-story circular tower of opaque and transparent glass. Light from the great bone-coloured plain below reflected ivory luminescence up the entire height of the Cloudy Sea. And overhead, the yellow-orange flaring orb of sun burned down the hotel's glassy length at one hundred and twenty degrees centigrade.

The jet capsule dived down under the tower's base and into another airlock. The hiss of inrushing air stopped and Conrad stepped through a long tube to an escalator.

The lobby was an enclosed oval of amber-tinted glass. The whole room swam in a golden haze of tinted moonlight. A smoky-blue carpet felt so thick underfoot that he unconsciously lifted his legs higher to keep from sinking. At the desk he was informed that Dr. von Rachin was in Unesco quarters on the seventh floor. He was also politely reminded that it was five o'clock in the morning, Earth time.

But he was already crossing over to the lift and paid no attention.

The seventh floor foyer was decorated in a rich burgundy-red that seemed to pulse under the untinted light streaming in from the barrel-shaped end-windows. He felt an atmosphere of excitement and nervousness creep into him. This was really it at last. In a few minutes things would be over. The thought of Val von Rachin was suddenly frightening.

She had stolen something from him—his self-confidence. And now he was trapped by his own emotions. He should hate her as much as

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he hated de Lamiter. De Lamiter had only destroyed his past—she had destroyed his future. And he would never get over her.

All the king's horses and all the king's men, if there ever really had been any, would never be able to put him together. The pieces were all lost—scattered into a past which was gone, and into a future he didn't want to face.

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He seemed to hang suspended along with time in that room of wine-coloured light. He didn't want to move—he didn't want to see her—he didn't care any more about de Lamiter. The bottom had dropped out of everything—and sheer inertia was holding him up. He no longer had the courage to turn around and leave. He would have to face her and slowly feel his heart collapse.

He glided over to a full-length mirror and tried to pull his emotions off his face and put them together so he would look normal again. His eyes were so dry they burned.

He stepped over to a reception desk and waited for his heart to slow down before pressing the buzzer. He felt limp and dead inside. The anticipation of seeing her again had vanished—and with it, all the empty foolish thoughts he had ever had about her.

And with the calming of his nerve and emotion, a certain kind of hopeful courage seemed to be taking control. Now that he had lost everything else, he might as well lose his dignity over her, as well. It might even amuse her to see his emotions freeze one by one as they tried to penetrate her ice-covered heart.

"Well, aren't you ever going to push the buzzer?" The voice was calm and quiet, trailing off into a throaty whisper.

Slowly he turned and faced her. She stood motionless in front of an open panel at the other end of the foyer. Her face was pale and expressionless, and her lips were slightly parted. Smoke from a cigarette in her right hand curled up behind her head, forming a halo against her red hair. The smoke-diffused burgundy light veiled her eyes under a faint purplish haze. A forest-green sweater was pulled down tightly over her breasts and tucked into a wine-coloured pair of slacks. Grecian sandals, the same red as her hair, were bound around her feet and ankles. The nails of her toes and fingers were painted a flaming scarlet, the colour of her parted lips.

Ironic, he thought, that everything about her should be red, the colour of passion—the one thing she didn't seem to know. He stood there feeling taut and dry inside, letting his eyes run over the curves of her body. He was aware that his breathing remained regular and his hand rested lightly on the desk edge.

Her voice again drifted huskily across the foyer. "I was awake and heard someone get off. Doesn't the buzzer work?" Her hand holding the cigarette hadn't moved. The smoke continued to circle into a halo around her head. She didn't smile or flicker an eyelid. A long silvery ash broke and fell powdering to the floor. "Well, Alister Conrad?"

He took a deep breath and crossed the room. He expected her to move back through the opening and allow him to enter, but she stood there watching him as he stopped abruptly to keep from bumping her.

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They were only inches apart. Her eyes were almost level with his. He looked down into them. They were cold and blue and emotionless.

" Did you find him ?"

A faint scent of perfumed lipstick drifted between them. He felt her hand on his arm. He let her wait while he searched her eyes again for some flicker of emotion. The distorted reflection of his own face was all he saw.

After a breath to take the returning tightness out of his throat, he said, " Yes."

She dropped his arm and turned into the room. He followed and the panel slid shut behind them.

A picture window overlooking *Mare Nubium* had a blue filter drawn over it. The light filtering through gave the emerald walls and ceiling of the room a bottomless sea-green depth. Low-slung airfoam furniture covered the wine-red rug in well composed arrangements. Several Lunar landscapes dotted the three walls.

She slipped behind a curving desk of silvered oak and stared out at the far-off Earth resting on the Moon's horizon like a mottled ball of taffy. She leaned back and clasped her hands over the bun of red hair on the back of her neck.

Her voice was faint and far-off. " There's liquor in the bar and cigarettes scattered over my desk—take anything you want."

He crossed the emerald depths of the room over to a wall-niche containing the bar.

" Something warm and smoky," she said.

To match your voice, he wanted to add. Instead, he said, " Scotch, then—plain Scotch."

He carried two glasses and a bottle of Scotch over to her desk and put them down, pushing aside two t-v control switch boxes, a blind screen, a memo pad, and a bottle of sodium dexadrine. The bottle of stimulant tablets lay nearly empty. If she had used all that, she must have been awake for days. Two huge silver ashtrays were crammed full of lipstick-stained cigarette butts, and the memo pads had notes and numbers on them written at different angles in a compressed handwriting that almost dug through the paper. Obviously she had been thinking desperately and fighting for a long time before she had given up.

She continued to lean back, her meditative gaze probing out past *Mare Nubium*, out to the taffy ball that was Earth. She now had on a pair of tinted glasses with heavy gold frames that completely masked her eyes. The forest-green sweater and wine slacks added rich colour to the long lush curves of her figure.

He suddenly felt a little mad, here in this emerald room as deep and

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silent as the sea, with an incomprehensible woman radiating frozen sex into a hazy blue light that was beginning to make his equilibrium spin. She took the drink he handed her and picked up a cigarette. She refilled her glass before asking in her calm throaty voice, "Where did you find him and how did you kill him?"

"He's here. I just arrived. I haven't had a chance yet."

She did not move. Whatever preoccupied her was a thing so important that it held her in a world of its own making, to which the affair of de Lamiter was less than the buzzing of a gnat. He, Conrad, was merely a companion to pour drinks and make the sound of words while she drank and relaxed her way out of exhaustion.

"He's masquerading as Alfred Drake." He tried to say it calmly.

For an instant he thought he saw her react, thought he saw emotions changing her face. Suddenly, in one continuous motion, she was out from behind the desk, across the room, and through an automatic wall panel.

He finished a cigarette and poured another drink. He would have hours for this, what he was planning to do. She would have to come back to hear his story.

Somewhere back in his mind he realised that he was becoming reckless—the Scotch was knitting his frazzled nerves together. Confidence was the only thing that would carry him through the next few hours with her. He had been given time where he had not expected time, and he had been drinking Scotch with a woman he never dreamed would drink Scotch. How the mighty hath fallen, he thought, smiling to himself.

Then she seemed to waver and float through the sea-green walls and blue haze. He remained sprawled and utterly relaxed in his chair, staring right through her until she was sitting behind the desk. Her dark glasses were off and in her hand. For the first time he noticed the black half-moons of exhaustion under her eyes.

She threw the glasses down on the desk and faced him. "Before, I said the sky fell. Well, Alfred Drake pulled it down on us." She looked at the Earth and her voice became irregular. "In terms of power, the Moon no longer belongs to the Earth. The Earth belongs to the Moon . . . And now, the Moon belongs to him—to Alfred Drake. And now I know how he did it."

Her voice hung in the filtered blueness. "He outmanoeuvred Unesco—and me—and the Science Council here on the Moon. He picked the Council's brains, cajoled them with their hidden desires, blackmailed them individually with their private secrets, played on their private vanities—mirrored back to them their every wish and

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weakness in a feedback circuit that drowned out Unesco. Drake—de Lamiter, an infallible pickpocket of the mind ! Very soon now this will all be official. He will be the Controller—Controller of Earth, Moon, the present, the future . . . everything smashed, and he did it in less than a week."

She made a visible effort and pulled herself back together. "Alfred Drake left for Earth over twelve hours ago on the *Arthur C. Clarke.* I've just checked the times." Her voice was even. " The *Willy Ley* just left again—and the *Clarke* won't be back for almost another twelve hours, so until then—we wait." She paused and gave him a faint smile. " There's time before that—so would you like to tell me what happened ?" She looked away from his eyes and almost whispered, " Since I saw you last."

She needed his company. It had never seemed possible that she could want anything from him. True, he was still the one that would have to kill de Lamiter-Drake. Now that she knew who Drake was, she wouldn't dare go near him with her knowledge and purpose burning in her mind for him to read. *He* was the only one who could approach Drake. And she was the only person who knew he could do it. Whether she was aware of it or not, that single thing was an emotional bridge between them which he intended to cross. And her barrier—that deadly combination of intelligence, sex, and power—an impregnable wall of ice to prevent anyone ever from breaking through to her inner world of logic, and unbalancing it with emotion . . . that was the thing that had frightened him. But now her barrier seemed only half-frozen.

He filled up her glass and then his own before replying. He seemed to be floating slightly, with his voice coming from far away, out of the emerald walls, as he quietly told her all that had happened.

He took his time, letting his voice lag behind his thoughts, letting his thoughts lag behind his eyes, where she could see as well as hear them if she wanted to look. But she only watched her cigarettes as they smouldered away one by one . . .

XVII

When he had finished, she took a deep breath and let it out in a sigh. " The one thing that impresses me—Rene de Lamiter carried his misdirection too far, in making your mind unreadable, if he actually did, he made you a danger to him—the *only* danger to him. And yet you, this single danger, are the only reason he failed on Earth."

She watched her cigarette glowing in the blue haze. " Nothing

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could be done against Alfred Drake, as long as he *was* Alfred Drake. As himself Alfred Drake is invulnerable. Even if Unesco ever used assassination politically, we wouldn't dare touch him. He's too public a figure—our motives would be obvious—Unesco would immediately be blamed and the public upheaval would be ruinous. The man who would kill him would have to make his attempt with the sure knowledge in advance that we couldn't protect him—he would be arrested and executed. And again, Alfred Drake as Alfred Drake, expecting some such attempt, would have guards around him."

Her throaty voice was ironical. "You can see I have thought about it. But Alfred Drake as Rene de Lamiter . . . as the disguised criminal, impersonator, and murderer, Rene de Lamiter—there would be no protests at *his* death. I can radio Earth later, when Hermes power project is finished, and have an intensive investigation that will corroborate all the details of your story with a time table. There must be enough evidence to corroborate every detail. Things like bullet-holes, footprints, broken glass, the wreckage of a heliojet drifting on the shores of Staten Island. All the machine-recorded receipts of anything you bought or hired with a credit card—to prove the time-table of your story. The corpse of Alfred Drake among all the other corpses to prove that someone has been definitely impersonating him.

"There is enough to convict de Lamiter *after he is dead.* But alive, he can't be approached, he can't be investigated, he can't be considered, he can't even be thought about too strongly by too many people. He would have instant warning at the first sign of action. He would have time to sell out the financial empire of Alfred Drake, take the money and slip into some new unknown identity, and laugh at us."

She looked off into the distance, her eyes slightly unfocused. "And I have no time. I can't start the full scale investigation that will clear you and convict him, unless he is dead. And I can't wait any longer to start it. The clues are vanishing. The moments are ticking by and no one can investigate, no one can approach him or think about him. He is invulnerable, invulnerable to everyone on Earth—except you." She drew a long breath and locked her gaze with his. "*You've got to kill him. The whole future of Earth is—*" Her voice caught. "You can have anything I have."

Anything . . . What did he want? She was leaning forward and the intensity of her gaze confused him. He was bombarded by a conflict of impulses. He remembered his purpose, the bridge he was crossing, the calm, unshakable wall of ice that had baffled him. Was she the same or was she changing? Could he reach her with words, could anything reach her?

"Then—I go back to Earth?" he asked.

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"You have to do it alone. You know—why." She reached into a drawer and tossed over a purple vial of pills. "You can get drunk if you like. These will sober you up when it's time to go."

He took the vial. "What about you?"

"What about me?"

He stood up. The bite in his voice surprised him. "This is all a little different from last time, isn't it?"

"Yes, I guess it is." She stood up uncertainly, her eyes going off-focus as if she were suddenly looking through him into distances of ice and loneliness. There was a tremble in her voice. "We shouldn't waste time talking nonsense. Open another bottle, before something inside me—" Her voice caught and she shuddered as if she were cold. "Something has burned out my—drive. You're—"

He walked away from her and brought back a fresh bottle of Scotch. Peculiarly he found himself wanting to smile.

Her voice was wavering. "I can't seem to focus properly on this problem. This has nothing to do with liquor. You're frustrating something . . . I'm Dr. Val von Rachin and you're—"

"I'm a man," he finished for her. A sudden snarling triumph surged into him from nowhere. Surprised, he let it take the lead.

She swayed slightly, staring through him. "You don't seem to be under my—my, I mean,—this has never happened before. My mental—they're all down—I can't seem to get the walls up. My emotions are starting to show through—" She caught herself. "I'm exhausted. You know it and you're waiting to—to— You're in love with me—I know it—and you're going to try to—make me fall." Her eyes went vaguely out of focus.

Acting purely on instinct now, he slapped her on the side of the face. Her eyes opened wide. Then her face fell apart into a kaleidoscope of emotions.

He had the upper hand at last! He now had back the thing she had stolen. Her eyes flickered closed and colour flamed into the spot where he had struck her. He slipped an arm around her waist and walked her over to the sofa. She was shaking all over.

He stood, staring down at her. After a while compunction came through his triumph. In defeat she had become just an ordinary human being like himself. It was her inhuman untouchable control that had been the enemy, and that was gone. Doctor Val von Rachin was just someone who could sit with her eyes closed and her hands half-clenched weakly, and shake with an unavailing effort to control herself, like anyone else.

"I'm sorry I slapped you," he said at last. "You looked like you were going into a state of hysteria, but that wasn't why I did it."

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Even this way, biting her lower lip, with her head back against the sofa and her face a quiet white mask, she was like a wonderfully sculpted female statue clad softly in forest-green wool and wine-dark nylon. Aphrodite clothed. He could understand what he had felt. It was a body not to be wasted on a calculating machine.

When he spoke again, there was a throb in his voice. "You did too good a job on me—and now maybe it's backfired. You should fix it so people don't fall in love with you after they leave you—or is it something you deliberately just-let-happen? Something thrown in for good measure to make sure the psychological conditioning thumbscrews down and holds."

She turned her head slowly from side to side. "No, it's not deliberate." She talked quietly, welcoming the distraction of questions and answers. "But it happens—too often. But no one would ever really want me if it weren't for some half-imagined touch of frigid eroticism that keeps one imagining and wondering and wanting to find out what I'm really like. To others like yourself, who are aware of the effect, it means desire and defeat mingled, an emotional strangeness. As if I were deliberately defeating them by being unreachable. And for that—they either hate me and want to destroy me or they think they love me. But without self-confidence, they can do nothing original or vital about it . . . I could give a man self-confidence but you can't give yourself to someone you don't want. And I've never wanted any man." Her eyes clouded and her voice became uneven. "But you got yours back, didn't you—your self-confidence?"

"That's right, I got mine back."

She closed her eyes for a moment. "I said I would give you anything if you would do what I wanted you to do. And there was only one thing you wanted."

Was that all he had wanted then? There was an empty feeling where his drive had been. A wish dies when it is fulfilled. She had just ticketed his burned-out desire for his inspection as neatly as labelling a stuffed sparrow in a taxidermist's window. That was all it had been. To touch the untouchable. To conquer the defenses. He had done it. And his drive had died.

He paused in lifting his glass to his lips. "Well, to go swimming in this Scotch is a very nice thing. You can't seem to drown no matter how much you swallow."

"No. I'm already drowned. We're both already drowned and lying at the bottom."

"Bottom of what?"

"The bottom of our dreams."

"Hah. What dreams did you ever have?"

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" None—until I said I would give you anything you wanted. Then something happened to me over there. I realised how lonely life can be when you don't need anybody or want anything—with only yourself. . . . You got the thing you wanted and slapped me for it. And we changed places. I knew it would be this way—the moment you sensed I was attainable you would be cured, the illusion vanished. It would have been that way with the others, too—if I had given them what they wanted—cured, like you."

He began to believe her. They were both drifting, drowned, at the bottom of their dreams here in this sea-green room. And his dreams, what were they? Of loving her, of wanting her? He'd had what he wanted, as she said, and now they were celebrating the funeral of lost illusions.

He turned the conversation to other things—and past them to others. It was like being on a raft, drifting, passing a snatch of her childhood, retelling an episode in the chase back to Earth, making vivid the adventure of it. Then she recounting something about the clever twists and manoeuvres in the struggle of Unesco to influence the Council decision, and how Drake parried them. They drifted timelessly through green time. And, oddly, he was happy . . .

XVIII

Harsh moon-reflected sunlight flooding in from outside hurt his eyes. He wondered why reception didn't have a filter. Probably the view and lighting was considered too spectacular for anyone first arriving to miss. He tried to rest his eyes by looking at the dozens of people waiting with him for the *Clarke* to rock. Up here on the Moon, he noticed, nobody said *land*—they all said *rock* And that was all the Moon was—one big rock. His vision suddenly slipped and started to spin.

He leaned against a wall and shook his head, reaching in his pocket for the vial of thiamine sober-ups. They were the size of horse-pills and he almost gagged before getting another down. Val had told him to take one every time he felt his head spin—this was the fourth time, but otherwise he felt all right, or thought he did.

Their first capsules had been taken together while still drunk—so drunk that they had washed them down with more Scotch. But then almost immediately they were sober, looking at each other through bloodshot eyes and wondering if it all had been a dream.

He tried not to think about her. She irritated him—because she had stopped irritating him after having irritated him for so long. There

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was now a lonely emptiness where the original irritation had been. But he was filling it with new irritation at not having the old irritation of loving her.

His head was flying off his shoulders. Quickly he choked down another pill. He had to quit thinking about her. Everything was drowned and strangled at the bottom of an empty Scotch bottle . . . A speaker called out that the *Arthur C. Clarke* was rocking.

Conrad walked over to the still-lowered escalator tube and waited, smoking one of her cigarettes. Someone had already arranged for his passage, giving him top priority back to Earth. Just how he was going to locate de Lamiter, he didn't know . . She had given him a new type of sonic stungun called a coagulator, and, because it killed in every cell, he had only to nick de Lamiter once. It was half again the size of a jet pen and he had it clipped to the inside of his left shirt-cuff.

Another wave of dizziness caught him and he went off balance. He leaned weakly against the escalator tube, fishing for another pill. The wave of drunkenness finally left him and his thoughts once more became normal.

A dull rumble rolled down from above and the whole Galileo Spaceport trembled like a leaf. Then a heavy boom and silence. The escalator tube swung up through the ceiling air-valve and out to the ship. Crowds of people milled around Conrad and the tube mouth. He felt more lonely and lost than ever. The things these people laughed and talked about had no meaning—the only thing that registered was the fact that they laughed and talked. Something he could never seem to do normally with anyone.

He stared up through the mouth of the tube at the descending passengers—and for a moment he thought he was having another attack of dizziness, but his head was clear and his vision steady. He could only stare—

At himself coming down the steps of the escalator.

He grew sick inside, blinked and shook his head—but he was still up there coming down the steps. He was losing his mind—he wanted to run—he might start screaming.

Then he got another jolt. Riding down next to himself, and smiling was Hypo Ned. Only, Conrad wasn't himself—he could only be de Lamiter!

He ducked back into the crowd, his heart pounding clear up in his head. What was de Lamiter doing back here so soon? And—as himself, Conrad? Hadn't de Lamiter found out that he was here—on the Moon?

He slipped the coagulator out from his shirt-cuff and elbowed his way back to the front of the crowd. They were gone. Had they seen

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him ? No—there they were, angling around the end edge of the crowd. Conrad dashed out into the pathway now clogged with passengers. He felt the panic of a nightmare, trying to dodge through them. If he had only recognized the situation—if he only had shot de Lamiter then and there while he had been still in the tube—

Someone yelled something about pushing and a rough hand jerked him back. He twisted loose and charged through the end corner of the crowd. He stumbled and the coagulator was knocked from his hand. There was laughter as he crawled after it through the crowd—just in time to see de Lamiter and Ned, along with a dozen others, disappearing through the Great Wall airlock and into the jet capsule. The lock circled shut and several latecomers were turned away.

He rushed over to the t-v booths and waited for an empty one, his stomach twisting. Then he didn't have the correct change. He cursed out loud and slammed out of the booth. Suddenly he realised that to have called her would have been the worst thing he could have done. De Lamiter would have read her mind, if he were already there, and instantly known that she had been warned and that he was on his way. Again, he had almost forgotten that only *he* was immune to de Lamiter. She could do nothing. Besides, it was even better this way. All de Lamiter would find in her mind was that he, Conrad, had left for Earth again—in search of de Lamiter. What de Lamiter would do to her then, he didn't know, but his game of impersonation, of course, would be over. Both she and he would realise that simultaneously. And would he try to kill her ? Or would she try to bargain with him ?

If he could only get there in time . . .

He had one big thing in his favour—neither knew he was coming. He went over and waited near the front of the line for the return of the capsule.

But how was it, he wondered, that de Lamiter wasn't aware that he had come to the Moon ? Surely the alias he had travelled under wouldn't stand the kind of scrutiny de Lamiter-Drake would have given it. On Earth he must have learned that his men hadn't been successful in their death hunt. He *must* know.

And Hypo Ned, all along, must have been in on the project with de Lamiter—and now, he too was here, but what for ? Probably to help de Lamiter with the disguise and to aid his carrying out the impersonation.

The airlock spun open and he allowed himself to be carried along by the others into the jet capsule. The lock closed and they shot up the Great Wall on a gleaming monorail as straight and thin as a javelin. Leaning back and breathing more easily, he looked up at the stars

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splashed all over the blackness. Through half-closed lids they looked like tears dripping down from a thousand eyes.

Everything would be over in a few minutes. And afterwards—it might be nice to go prowling around up there, through those silver tears. Somebody behind him had just said the *Relativity* would be finished in another month. And soon after, would be far out among the stars. Conrad suddenly wanted to be on that ship, hurling outwards and upward through an eternal sky full of shining tears.

Half the people in the capsule got out at the observatory. Then they were rocketing along again to the last stop, the *Mare Nubium*. The last stop and the end of the line still keeping him down from the stars . . . And up there in a sea-green and emerald room were the persons holding that line . . .

Conrad hurried out of the capsule and made his way ahead of the rest up into the lobby. The man at the desk looked startled when he saw Conrad. His jaw dropped and he tried to get a second look at his face, but Conrad was already halfway over to the house of t-v booths.

He rumpled his hair into a different part, turned up his collar, then lit the burned-out cigarette butt that was still in his mouth and filled the front of the screen with a cloud of smoke. He got Unesco and the secretary of Dr. von Rachin.

Keeping his voice muffled and the cigarette in front of his face, he asked if Alister Conrad was in seeing the Doctor. He got the affirmative, somewhat hesitant, then cut off. The secretary hadn't recognised him, in spite of having seen him leave von Rachin's quarters only several hours previously.

Now he knew positively where to rush de Lamiter.

On the way up, he took out his own stungun and held it ready under the fold of his coat. He would have to knock out that secretary immediately upon stepping out from the lift, or she would recognise him this time.

He stepped out into the foyer and did just that. The secretary collapsed quietly over her desk and he swiftly crossed the rich carpeting to the far wall panel. He put back his own gun and took out the deadly little coagulator. It gleamed redly in the burgundy room light, reminding him of her hair. He pushed the panel button and heard a faint chime. Then it slid open and he was standing face to face with Val von Rachin. He charged past her into the room. De Lamiter was over against the window.

Von Rachin stepped around and yanked away the coagulator before he even had a chance to get it pointed. Simultaneously something

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came crashing down over his head. The floor lunged up at him, then faded away with the rest of the room.

His head slowly lifted from his chest and lolled back against something soft. He trembled as a pain-chill went zigzagging through his head. His eyes were open and swimming through a deep green sea slapping at his face . . .

" That's right. Sleepy time's over, de Lamiter—time to wake up—time to wake up !" The slap-slap became harder and harder.

" Not too fast, Ned. He's only been out a few minutes. . . . Here he comes now."

Conrad jerked his head up and his eyes focused on himself smiling over from the Lunar window. Then he looked into a wall mirror across the room and in front of him and saw himself again, this time sitting in a chair. The slaps had stopped and Hypo Ned stood back from him, chuckling softly.

" Mr. Rene de Lamiter ! Of course, you know everyone here—*especially* Mister Conrad," Ned nodded towards the window, " and—" he cut off, looking over at Val von Rachin. " We're sorry our greeting was so rough but your visit caught us unawares. The desk clerk downstairs barely had time to warn us that there seemed to be one too many Alister Conrads walking around."

" All right, Ned, cut the explaining," the Conrad over at the window said. " He reads minds. He knows he's finished."

Conrad in the chair struggled, first physically, then mentally. But it was no use either way. His coat had been turned around on him, strait-jacketing his arms and torso to the back of the chair. His belt had been removed and was around his ankles, binding them to the chair legs.

Why hadn't they killed him instantly if they thought he was de Lamiter ? He looked over at von Rachin standing off to the side away from them all. Her face was a marble mask. Only her eyes glittering through their blue dimness were alive. The coagulator was in her half-raised hand, pointing between de Lamiter and himself.

He realised now why he was still alive. Von Rachin wasn't sure which was which—which was the real de Lamiter.

It had happened, the only thing he hadn't thought of.

But why was *he* tied up and not de Lamiter ? She must consider him more likely to be de Lamiter. What could de Lamiter have possibly told her ? He must have read her mind and instantly told her that he could positively prove who Conrad really was.

Conrad felt cold and weak inside. Suspense slowed his thoughts to a crawl. There was nothing he could say. His piece had already been said—there was nothing more he could tell her. And de Lamiter

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knew that. The unreadability of his mind was no help to him now. He looked over at de Lamiter. He was still smiling and he gave Conrad a faint nod, as if to agree.

A low buzz came from the t-v screen. Von Rachin stepped behind her desk and answered it.

"We held the *Clarke* the minute we got your call, Doctor. But he wasn't on board—nor anywhere in Galileo that we could discover."

"I know," she cut in, her voice heavy and calm, "he's here now. Thank you for holding the ship." She clicked off, then hesitated an instant, staring down at the glimmer of an empty Scotch bottle still on the desk.

XIX

Conrad watched her eyes slowly look into his. Then she turned and walked away. But he hadn't missed the faint bitterness in her look.

De Lamiter's voice came across the room, its pitch and texture almost identical with Conrad's. "I wonder why he didn't coagulate me when I stepped off the ship? Didn't you see me or catch my thought waves soon enough?" He walked over to Conrad. "Which was it, de Lamiter?"

Conrad shrugged.

"That's right," Hypo Ned said from behind Conrad. "That shrug's the right attitude—what does it matter now. Let's get on with the unmasking ceremony we promised the Doctor."

De Lamiter laughed quietly and went over to the desk. He leaned comfortably against it, igniting a cigarette for himself, then one for Val von Rachin. When she refused it he tossed it across to Ned.

"Before our unexpected visitor arrived," de Lamiter began, "I started to tell you that at first I had no idea de Lamiter was a telepath. But there was a certain sinister power about him, and I began to find myself in some unknown suspense whenever in his presence. I became uneasy and began to look forward to the time when he would finally disappear into his suspended animation run.

"After several experiments with animals, he decided to take a week's trial run before setting the sleep-tank for whatever time destination he had in mind. As I said, he trusted me to assist him, and left the controls in my hands as he went into the trial run. If this run proved successful and there was no damage to the human metabolism, he planned to go directly into the final one. For this first run, there was an auxiliary remote control panel, including an audio nerve-pulse amplifier, which I was to stand by on in case anything went wrong.

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" After several days into the run, boredom set in and I became curious about the belongings he intended taking with him. I went over to the side of the tank where they were and discovered a treasure trove ! There was an incredible device for substituting retinal patterns, a key to changed identity and the private locks of the world. And, more incredible, there was a make-up box containing a collodial plastic which, when molded over the face or body, assumed the properties of living flesh, a thing completely outmoding the need for plastic surgery.

" I suddenly wanted these two things. Their possibilities were tremendous. The tank had an elaborate interior locking mechanism almost as foolproof as my safe-vault—once he went into his final run I would never be able to get them. So I went back to the auxiliary and shoved the tank timer up to its limit, one hundred years. And left him there. He would never know what happened." No one interrupted, and he went on :

" Immediately afterwards, I switched from making refrigeration units to the manufacture of sleep-tanks—until I was stopped by the

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authorities—all the while considering and choosing among the stupendous schemes made possible by the synthetic flesh and retina changer.

"One day, many months later, my wife, whom I mentioned as having been in love with de Lamiter, was flying me out for some hunting. She made me angrier than usual over something, so to hurt her I told her that I had known all along how she felt about de Lamiter and that I had deliberately locked him away in a sleep-tank forever, unconscious, helpless, and completely at my mercy. I could do with him as I liked and she could never find or save him, being unable to get into my vault. She must have interpreted this to mean that the information as to his whereabouts was there.

"The reaction on her was all that could have been desired. But I had overdone it. At the hunting preserve, when I stepped out of the jet, she picked up the shotgun she was to have handed me and shot me in the back of the head. Fortunately, though, haste threw her aim off and I only received a fringe of the shot. After I regained consciousness alone in the woods I was nauseous for a long time. I knew my brain had probably been damaged. But I didn't know how badly, until I started becoming aware of other consciousnesses and other awarenesses inside of myself. At first I thought I was going insane, as all sorts of weird impressions and desires pulsed in and out of my head. Then a family of deer loped past, and I got the memory of salt. And the taste of salt.

"Those deer were headed for a salt-lick, and I had read their minds. Later by concentrating, I learned to tune in only one consciousness at a time. But after the deer incident, I suddenly realised what fabulous power I had if it also worked on humans.

"It did. I went to Hypo Ned, here, and had him patch up the shot wounds, warning him to be careful not to probe too deeply into the interior for the shot that must have caused my telepathic powers. At the time, I had no particular reason for wanting to be thought dead, but since Laura thought I was, and perhaps other people as well, I decided to take advantage of it. Later on, something might occur whereby such a belief would be of use to me. So far, Ned was the only one in on it and his mind was completely loyal to me.

"I then went out to Sleep-Tanks and used a hidden tunnel from outside into the safe-vault. I had a tape recorder with me and a stun-gun—and a new power which now made handling de Lamiter a safe proposition. I intended to pick his brain of everything it held that I could assimilate and find out where he had acquired such incredible knowledge. Then I intended to continue keeping him on ice, so to speak, as a sort of brain trust for any future problems. And it was foolproof. He could never lie to me or give me false data—I would

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know it in an instant—and if he resisted, there were ways Hypo Ned knew of to make him behave. But I didn't think that would be necessary—once de Lamiter learned there was no way of defeating a telepath.

" The first thing I discovered was that his thought processes were as completely frozen as the rest of him. I opened the tank, adjusted the controls and stood over him while he thawed out. Consciousness seemed long in returning; it was long after the stimulators had stopped. Then slowly his impression-awareness began to fill my head." He still held the floor.

" All of a sudden I seemed to be getting an echo of my own thoughts —a feed-back *and it was coming from his mind.* He was a telepath, too ! Simultaneously his eyes opened and both his hands grabbed the stungun which I had in my fist at my side. He twisted the gun up while I was pounding him in the groin with my free fist and, for an instant, the gun was pointing at his chest. I squeezed the trigger, but by that time, he had it all the way around and pointing to me. On my way down, I got one last thought from him—*that there wasn't room enough in the world for two telepaths.* Then, in some way I hadn't discovered, I felt him picking my brain to pieces, taking my plans, destroying my memory. Then I hit the floor and went into darkness.

" Then I was starting all over again in the woods where I'd left off the first time—only this time, without any telepathic power—or memory."

For the first time, de Lamiter broke his smooth narration to take several deep breaths and to light a cigarette. He smiled at von Rachin, then at Conrad.

Conrad was numb inside. He had been, ever since he began to realise what de Lamiter was saying might be the complete truth. This was the true story of what Alister Conrad had done and planned, but now de Lamiter knew about it, and he, Alister Conrad, had forgotten. De Lamiter was telling his story for him ! What must seem to von Rachin, the most important evidence of all that he, de Lamiter, was really Alister Conrad, and vice versa.

And the lovely character touches with which de Lamiter was building himself up as Conrad ! The utter frankness and honesty with which he told about his own ruthless opportunism ! That part had shaken Conrad. He might have done all this, too. It fitted in with what he had learned about his past character. De Lamiter could have picked it all right out of his mind before his memory was destroyed.

Somewhere within himself he felt his conscience start to squirm. If he had actually done what de Lamiter was pretending to have done, then he couldn't blame de Lamiter for what de Lamiter had done to him. He saw now that it had been his own viciousness and selfishness

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that had caused all this. It was responsible for everything including the influence, in some way, of de Lamiter's decision to seize control of everything. After his narrow escape with Conrad, he had probably decided that it was the only way to be safe.

The fact that he had undergone a personality change, along with his memory loss, didn't change his feelings about himself. He suddenly didn't care any more. As far as he was concerned, from now on it was all between von Rachin and de Lamiter. Everything. If de Lamiter convinced her that he, Conrad, was de Lamiter, he wouldn't care either. He had probably already done so. And Conrad knew he no longer hated de Lamiter, only himself.

De Lamiter started in again. "I now have my full memory back, and that's why it is possible to tell you what happened before my amnesia. Whatever de Lamiter did to my memory, he didn't do it permanently enough. It gradually returned over a period of hours shortly before I left for the Moon.

Conrad smiled at that. He wished it were true.

De Lamiter smiled back blandly. "It was an easy thing for him to assume my guise and personality, as easy as it was later to assume Drake's—we were all the same size and bone structure type. Perhaps the type is frequent. Even in voice we were alike, all baritones. And he knew my mind.

"Some of what I'm telling you came from Ned, who didn't know what was going on until the very end. De Lamiter left me in the safe-vault and went to Ned disguised as me. He told him that he had great schemes afoot which necessitated undergoing self-induced amnesia and a number of other things. He gave Ned the retina changer—explaining that his eyes might be messed up and need treatment to get their original pattern back. Perhaps he merely intended that I be picked up with his pattern if he suddenly found he needed a scapegoat. But after this—and the interlude in the woods—you were notified that something had happened to Alister Conrad's mind, making it unreadable. So you called me in to hunt de Lamiter down. He heard of this and recognised it as an opportunity to keep any and all pursuit of him completely under control. He could easily keep track of me that way, then when the time came for my disposal, he could have me removed and take my place, reporting in to you as Alister Conrad and giving long tales of how he almost caught up with de Lamiter."

De Lamiter laughed slightly. "He could keep that up until he finished gaining control of the Moon, achieved total power, and have the government in his pocket and no longer needed to hide. A beautiful job of planning and chance-taking! And only one thing went wrong.

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"When it was scheduled that I die I managed to stay alive. His men never managed to kill me. And in my detecting I began to find out too much. Eventually things ended up with my discovering that de Lamiter had taken over the guise of Alfred Drake and was on the Moon, presumably getting the Science Council to declare secession of the Moon from Earth. The last blow to his scheme was that I unexpectedly recovered my memory and understood what was going on.

"After having thought everything was solved, it was something of a shock to arrive here and learn from you that I had been beaten to the punch. And that *I* was under suspicion of being de Lamiter. Fortunately, though, de Lamiter apparently caught a glimpse of me or my thought waves and came rushing back here for the kill.

"So here we all are. You say you've already heard his story, and now you've heard mine." De Lamiter laughed slightly, stretching out his arms and slouching back on the desk.

Conrad stared off into the dim greenness. De Lamiter was the one who had done a beautiful job of planning and chance-taking. He wished he really was de Lamiter instead of Conrad. He would like to be reading von Rachin's mind right now, as de Lamiter was.

She had stood motionless all during the recital and she continued to do so. Conrad wondered if his face was as white as hers. She seemed shaken by some inner conflict which was beginning to puzzle him. Her eyes were very narrow and from where she was standing, this gave the impression that she was staring at all of them at once. She knew that one of them was reading her mind.

No one said a word. De Lamiter was smiling and smoking again. There wasn't a sound from Ned. They were figures in a tableau of frozen sea-green ice.

XX

At last von Rachin spoke, looking at de Lamiter. "The stories were nice . . . yours was the nicer." The roughness had disappeared from her voice and it was a heavy whisper.

De Lamiter's eyes glittered at her admiringly. He nodded slowly.

She moistened her lips. "Either story could be true. But since there is still no tangible proof, both your stories as well as your bodies will have to be gone over and carefully checked back on Earth."

De Lamiter chuckled. "No, that won't be necessary—because now we come to the final hand! This may sound and look dramatic but I've been building up to it with my whole story." His face sobered. "All right, Ned. Let's have the bag."

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Ned was over to him with a black bag before he had finished. De Lamiter opened it and took out a retina changer. He carefully went over it with von Rachin, explaining its operation and some of the theory behind it, most of which he said he had guessed.

When they were finished, he said, "Now you can check his eyes yourself. Turn it on full blast. It may burn his eyes some, but it will get right down to the original retina pattern in one treatment."

First, von Rachin called a clerk and had him bring in a retina meter along with a file of retina numbers and patterns. The clerk looked dumbfounded at the two Conrads, then stumbling, he left the room.

Conrad knew she had his pattern there as well as de Lamiter's original one.

She turned to de Lamiter. "Suppose I check yours first?" She took his current pattern with the meter first, before applying the changer which was empty and set for maximum intensity for the removal of any false patterns. The operation took three minutes, with the changer shutting off automatically. In that time, de Lamiter's face became ashen and shiny with sweat. When his eyes opened, they were raw and inflamed.

Von Rachin compared the two patterns she had just taken against the file patterns of de Lamiter and Conrad. "Before and after—" she said. "They are both Alister Conrad."

De Lamiter smiled tiredly. Conrad didn't stir. He stared off at himself in the wall mirror. His thoughts seemed trapped inside the glass with his image.

Von Rachin adjusted a baby spot on the wall so that its beam cut away the blue-green dimness around him. His mirror image became etched with light, and his eyes glowed wanly back at him.

She crossed over with the apparatus, keeping her vision in a fixed focus which stared right through him. The coagulator had been clipped to the sleeve of her sweater. It flashed and gleamed in the spotlight like a diamond.

After taking a meter pattern reading, she checked it against the others. She glanced over at de Lamiter. "So far, he is also Alister Conrad."

De Lamiter said nothing.

Conrad felt the retina changer come coldly in contact with the outer rims of his eyes. There was a firelike contact between it and the inside of his eyes. A haze of red descended down over his consciousness. His vision continued to waver and burn after she took away the changer. He blinked away some tears and his eyes cleared somewhat. By this time she was studying the collection of patterns.

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When it finally came, her voice was slightly higher in pitch. "He is now Rene de Lamiter."

De Lamiter smiled and bowed over to Conrad.

Conrad began to feel a heavy uneasiness creep into him. He had expected what had happened, but now he had a vague fear something was not right—that something was fast becoming terribly wrong.

Von Rachin's words now had a hard sharpness. "This still does not settle anything . . . There could be several layers of the de Lamiter pattern under the single Conrad. And in your case, there could be several layers of the Conrad—if you are de Lamiter. The retina changer is too little understood and complex to trust and let be the deciding factor in an issue such as this. If you should be de Lamiter, then you would naturally see that the changer gives these results."

What difference, Conrad thought, did it or anything else make. He knew by the expression of smugness on de Lamiter's face that he had foreseen all questions and their answers. No matter what, he would make her believe Conrad was de Lamiter, and it would be done without any of them ever leaving the room. He would have to do it that way, to prevent any checking or outside questioning, the only kind of thing left, Conrad realised, that might save him.

Von Rachin stood motionless beside him, staring over at de Lamiter. More and more she was talking to de Lamiter as if he were actually Conrad. And de Lamiter knew that very soon now he would finish closing the gap completely.

When he spoke to her, de Lamiter kept all smugness out of his voice: "I'm glad you paint your nails . . . Because of that, you can deal out the final proof yourself." Despite their strangeness, his words had a sincere and deadly sound.

She stared at her nails as if she had never noticed them before.

"Yes, their artistry contrasts quite startlingly with your—personality," de Lamiter continued in a voice of sudden charm.

Von Rachin stared up from her hands slowly, as if vaguely disconcerted by them.

De Lamiter crossed his arms over his chest. "Do you use amyl acetone as a remover?"

Conrad watched her reflection in the mirror. She took a long time to nod.

"Have it sent in, along with any acetone anyone else might have. Also, a small sponge and dish."

She crossed over to the t-v and gave instructions. A panel slid open and a tray was handed in to her. She carried the tray of articles over to Conrad and set it down on a small end table. De Lamiter

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told her to pour the bottles of polish remover into the dish and soak it up with the sponge.

When she had done this, de Lamiter said, "Now wipe it over his face!"

She hesitated an instant, then pressed the sponge against Conrad's forehead. Some of the stuff ran down into the corners of his eyes before he could shut them. He caught his breath—it hissed through his clenched teeth. The outside of his face felt numb and freezing. The sponge rubbed in a circular movement up and over it, then over his neck and ears. He was dripping with ice. He heard a sharp intake of breath as the sponge was pulled away from him—followed by silence.

He opened his eyes and through his burning vision, looked at himself in the mirror. His brow, his cheeks, his chin, the whole shape of his face was melting and changing, running down his shoulders on to his turned-around suit coat.

Savagely he shook his head. Drops from his dripping ear-lobes scattered like rain. The tip of his nose bent to one side, then slid off into his lap. He shut his pain-filled eyes— This wasn't real! His vision must have become distorted, damaged. He opened his eyes again—in time to see part of his chin melt away. For a moment he went insane and he heard himself scream—then his brain blacked-out . . . When it cleared and he could see again, von Rachin was across the room, away from all of them. De Lamiter was laughing quietly to himself, while Ned, who had joined him, chuckled loudly.

Still shaken and ill, Conrad looked into the mirror. Only he wasn't Conrad any more. A lean, skeletal face stared back at him. His ears were smaller and flatter, his chin more pointed, his nose narrower, tapering off into a sharp angle. The parched white skin of his face had stretched his eyes wider open. And they glared out wildly, trapped behind another face—*his new face—his real face.*

De Lamiter stopped laughing. "Oh, I almost forgot—the final touch. We mustn't allow him to die with *my eyes.*" He turned to Ned. "Give him back his own eyes."

Ned took a small object out of the still open bag and walked over, holding it like a gun. He watched Ned point it into his eyes—a pencil-thin beam of heavy blue light blinded him and for several minutes, he saw nothing but sheets of blue. When he could see the mirror again, he looked into a stranger's eyes.

"Now you know—Rene de Lamiter!"

He heard his name—for the first time realising that it *was* his own. And his brain slowly stopped trying to drown itself under waves of shock. His reason swam to the surface. He looked across the room

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to Alister Conrad, who was really Alister Conrad ! Then back to the mirror and the *real* himself—Rene de Lamiter !

A bolt of hate shot through him.

Conrad had done this to him—taken his memory and telepathic powers. Not *he* who had done it to Conrad. And the real Conrad could read minds now ! All but his. But now even that advantage was lost. Too late. Everything had happened too late. He was Rene de Lamiter and he was going to die. Everything he had felt for Conrad, thinking he was de Lamiter, he suddenly felt for himself.

Vitality flamed in him. He had to survive—*somehow he had to* !

Viciousness and hate snarled inside him as he stared at Conrad. He trembled, trying to keep from . . . he didn't know what. What were they waiting for ? Why didn't they kill him ?

Von Rachin had the coagulator again in her hand. But she seemed frozen, her breasts motionless, as if holding her breath.

Conrad's voice was harsh with a faint sneer. "You're not losing your nerve, are you, just because he's alive and conscious and not in a sleep-tank ?"

She stared back at him, a flush creeping over her face.

De Lamiter wondered what was wrong with her. She looked as though she had lost touch with reality. Were her emotions somehow still entangled with that earlier drunken interlude, even though she knew who he was now ? Or, for some fantastic reason, couldn't she bring herself to do the final necessary adjusting ? Despite the tensions and strains brought on by his desire to survive, his thoughts were calm and lucid—he began to realise at least part of the answer.

She had preferred *his* Conrad to the new *real* Conrad. And the real Conrad was receiving her shaken thoughts.

Conrad's attitude suddenly shifted and softened. "My remarks have been in bad taste. I apologize." He tried to smile charmingly. "I can see now how my natural callousness exaggerated by this eleventh-hour strain must be emotionally disconcerting." He looked over at de Lamiter. "Perhaps we should even let such a—person have some kind of final last words."

Von Rachin seemed to let out her breath. The tip of her tongue ran slowly over her lips. She concentrated her gaze directly into de Lamiter's eyes. Her nostrils dilated once and something throbbed in her throat.

Conrad seemed pleased with the change he had brought about. But there was contempt in his smile as he looked from her to de Lamiter.

De Lamiter's mind wound up into a tight ball of possible things to say. Somehow he still had to shake her into confusion of some kind. How that would help him now he couldn't see. It was the only thing

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left he could do. If he could make her thoughts enrage Conrad . . . but what was there to say? All that remained was the truth of what must have actually happened, and most of that would have to be guesswork.

His breath went down his raw throat like sandpaper. A burning dryness coated his mouth. They were all staring at him now, waiting.

"You don't give me much time. Anyway, there's not much of a case to propose. Isn't this about time for the usual final cigarette?"

Conrad gave another of his quiet laughs. "Oh, a traditionalist, eh? Give him one, Ned. Then see if you can hunt up a blindfold for him, too!"

Ned chuckled as he stuck the cigarette into de Lamiter's mouth.

Val von Rachin was watching him through the curtain of smoke. She hadn't moved, and her eyes hadn't left his. She didn't seem aware of the other two—only of him. He glanced over to Conrad. Whatever her thoughts, they produced nothing but amused tolerance on his face.

De Lamiter stopped blowing the smoke-screen and let the cigarette dangle from the corner of his mouth. "Since I'm Rene de Lamiter, there's now no point in having any case anyway." He tried to forget all about the other two men and concentrate only on her. "I'm sorry about those bottles' full of dreams we drank. They were with the wrong man. In a few minutes, though, you can drink them all over again with the real Alister Conrad. But I can prove the first dreams were with me." There was a shake in his voice. He was trying to say goodbye—and she seemed to understand. Her eyes were oddly misted and, for a moment, her parted lips trembled.

Something caught inside his chest and he felt a little of her loneliness. He tried to keep the shake out of his voice. "And one day, when it's too late, you'll discover Conrad's whole story was inside-outside. You think it's true now because he's found de Lamiter for you. You think I'm the important thing—but I'm not. I was a piece of misdirection he deliberately threw in at the beginning—in case of an emergency such as this. Oh, I'm Rene de Lamiter, I believe that now, but Rene de Lamiter with his memory and telepathic powers pulled.

"Conrad's wife shot him, all right—and the wound made him a telepath. And he went back to pick my brains. That part of his story must be true. I can't explain everything that happened as well as he can, because I can't remember what happened." He heard his voice quaver and he steadied it with a lopsided smile. "But I can guess. He won that fight, when he woke me up from the sleep-tank. He put me under stun and kept me under because my telepathy was dangerous to him when I was conscious, and while he and Ned kept

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me under, they probed around in the back of my brain in the area where the wound had given him telepathy, probably sweeping with a probe to destroy a little brain tissue at a time, keeping me half-conscious and questioning me to find out if I could still read minds after each sweep. He must have been disappointed when my memory went blank, too. Disappointed because now he couldn't use me for a private brain trust, a slave . . . Telepathy must have been so central to my learning and thinking centres, that when it went everything else went with it.

" But then he realised that I was harmless, helpless, remembering nothing, and he decided he could use me. He must have thought that it was a good joke to disguise me as himself and send me wandering back into New York to confuse everybody and be handy to take the blame for any crimes he committed. And if Laura was still gunning for him, trying to protect me, it would be even funnier if she killed me, thinking I was Conrad, before his hired guns got around to killing her. Whichever way it happened I was certain to take the blame for her death, or she for mine. The arrangement was perfect. And earlier, when Unesco suddenly noticed that my mind couldn't be read, and picked me to track down the mysterious missing Rene de Lamiter, it must have been even funnier."

He was suddenly out of words and emotions. He realised, now, no matter how much or how well he had shaken von Rachin's confidence, Conrad would see to it that he didn't live beyond the room. He took a feeble puff from the cigarette still clinging to his mouth. He might as well keep it there—he would be dead before it burned his lips.

Conrad sneered. " A pretty piece of fantasy—as full of holes as the Moon. I won't even bother trying to uncover the rest of them."

De Lamiter kept his eyes on von Rachin. A warmth was spreading up from her neck and into her cheeks. Around her nostrils there was a white rigidness, and her eyes were wet and shiny.

" You've given two awfully good stories." The tremble that had been in de Lamiter's voice was now in hers. " Your second is almost as good as your first, de Lamiter. And both as good as Conrad's." She swallowed, then continued. " But Conrad proved his story."

" There is a way I could prove mine," de Lamiter said, all final hope going out of his voice. " A way that will probably occur to you someday, after it's too late. But if I told you now he would read the change of your thought reactions—and it would be just as necessary for him to kill you as you think it is to kill me."

" And you won't tell ?"

" We both shouldn't die."

" What if I should suddenly decide to postpone your death ?"

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"It would do no good. Conrad wouldn't wait to be tested and exposed. He would kill us both."

"Why? He has no further interest in you. He's exposed you—"

De Lamiter shrugged. "Why should you die, too?"

She stared at him, her eyes suddenly large and round. "You would let me go ahead and kill you?" Her voice broke. "You know, I almost believe you do—have proof." She started to bring the coagulator up. "I think we will—"

Whatever she thought, Conrad had already caught it.

De Lamiter realised too late what her thought must have been and now what Conrad was intending. He was already across the room and over to her side before she was aware of what was happening. She whirled.

Conrad laughed. "I didn't mean to startle you, Doctor." His face suddenly assumed a dramatic expression of gravity. "I only wanted to whisper something to you that will—"

"Get away from him! He's going to grab you!" De Lamiter shouted.

XXI

She froze. For one startled instant her vision wavered away from Conrad and over to him. In that instant Conrad stepped behind her and threw a hammer-lock around her neck. With his other hand he grabbed the coagulator to keep it pointing away from him. Then he slowly increased the pressure around her neck, strangling her until her knees buckled and she sagged back against him. He twisted the gun out of her hand and let her drop to the floor.

Conrad sneered. "We gave de Lamiter too much time to smoke that cigarette before the firing squad! He succeeded in disconcerting her some way. She was going to hold us here until—I didn't want to untangle the rest of her thought pattern . . . No, our self-confidence made us a little too reckless, Ned. We overlooked the power of de Lamiter's mouth—and now the dilemma has us on both horns." He looked down at the unconscious von Rachin. "We have to do some fast sawing . . . I spotted a stungun on de Lamiter, when he was going down for the count, that she didn't see. Get it out of his pocket, then give her a full dose of stun."

Ned walked over and slipped the gun out of his turned-around inner coat pocket. De Lamiter barely breathed. His insides felt paralyzed. The cigarette was almost up to his lips—only a minute now, before they turned their attention to him.

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Ned stood next to Conrad. His face was white and pinched, but still had its eternal smile. The stungun was in his hand. " Why not use her own gadget on her ?"

" I don't want to start coagulating anyone until we see how we're going to rectify this mess." Conrad's face was grave. He jerked his head over to de Lamiter. " We might even find some use for him," he said with a nervous rush. " Better not give her the full dose—she'd be out for hours. Nick her with a light one and keep doing it at fifteen minute intervals."

The gun was already pointed down at her. Ned pressed the stud.

Conrad paced back and forth, rubbing the back of his neck. " Do you realise the situation ? We're trapped on the Moon for eight more hours—until the *Willy Ley* comes. And we don't dare to keep this status quo that long, unless we want to take on the job of trying to kill everybody in the place. The moment we left she would be discovered. Then nobody would get off the Moon."

Ned said, " I still say why not kill her and him, walk out and assume another disguise. There's still enough stuff left. Who's going to know what happened with both of them dead ?"

" We don't dare kill her. They would have eight long hours in which to figure what happened. Disguise or no disguise, they would search and screen everyone on the Moon until they found out where we had disappeared to." Conrad suddenly stopped pacing. " But whatever's done, has got to be done without leaving this room. Now let me think a minute. Tear her desk apart, while you're waiting, and find those tapes she's been recording all this down on."

De Lamiter felt the cigarette start to warm his lips. It wouldn't be long now. Conrad was slowly rubbing the back of his neck with both hands, while Ned ripped out the tape recording mechanism.

" Burn those tapes," Conrad snarled.

Ned stared at him, then he ignited them with his cigarette butt and dropped them into the wastebasket.

" Ned, how the hell are you so calm ? But why shouldn't you be, you've nothing to lose compared to me. You might even get off with your life. Though it isn't so much my life that bothers me. It's the thought of this whole tremendous scheme now on the verge of rack and ruin ! And all for the want of a . . . something . . ." His voice trailed off and he stared at the floor. " Don't think so damn loud, Ned ! How do you expect me to think with everybody's thoughts crashing in ?"

The question was rhetorical and Ned ignored it. " Fifteen minutes are about up. Shall I give her another stun ?"

Conrad didn't answer, so Ned shot her again.

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The cigarette suddenly burned into de Lamiter's lips. He tried to flick it out with his tongue—it clung an instant, then tumbled down his chin and into a fold of his turned-around coat. He felt a little dazed. His cigarette was gone and yet he was still alive. Hope gripped him. He cut the thought off. He glanced down and watched the cloth of his suit smoulder under the cigarette-butt. The amyl acetone had mixed with the flesh colloid to form a dry, whitish crust covering his coat. He looked up in time to see Conrad staring at him with a curious gleam.

"This is the most fantastic yet, Ned. But I think we've got it." His voice was calm again. "I'm going to have to change again with our friend de Lamiter."

Ned stared at him, his smile for once gone.

"Shut up what you're thinking and listen. Get that make-up kit over here and start changing me into de Lamiter."

Ned brought the bag over. "The retina pattern, too?" Without waiting for an answer, he pushed the changer against Conrad's eyes and inserted a copy of de Lamiter's pattern. Then he went to work with the plaster colloid.

"You should have been a surgeon, Ned, or a sculptor. It would take me at least an hour to do what you are doing in minutes. Be sure to get the colour right, Ned—he's pretty pale. And don't forget my eyes."

Ned went over and held a small vial of liquid against the warmth of de Lamiter's cheek. He ignored the thin trickle of smoke from his suit. When he finally pulled the vial away, the liquid was the same shade of de Lamiter's flesh. He went back and smeared the contents over Conrad's new face. It was soon completely the face of de Lamiter.

"The eyes, Ned, the eyes."

Ned picked up a tube and squirted a thin spray around each pupil. Conrad closed his eyes until Ned counted ten. Then he jumped up from the desk where he had been sitting and went over to the mirror. Being careful not to obscure de Lamiter's reflection, he compared the two faces. He broke out in a smile of satisfaction.

"Look at our two faces, Ned. The Mask of Comedy and the Mask of Tragedy!"

"Cut the mugging, Conrad. Why this big hold-off on what-comes-next?"

"And as soon as I get his clothes on, even you, Ned—" Conrad shrugged and turned away from the mirror. He walked over to Ned. "It occurred to me that you won't like what comes next, Ned." Conrad's reckless high-spirits had returned, lending a certain charm

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to his manner. " In fact, it's going to upset you quite terribly. But it's the only way out, Ned, the only way !"

" Come on ! What are you bubbling about ?"

" It's this way. I make de Lamiter into me. Then I kill him. When von Rachin come to, I am Rene de Lamiter. Conrad is lying dead on the floor. What happened ? Conrad and Ned came to blows over what each thought was the safe course to follow. At one point in the foray, Ned knocked the coagulator out of Conrad's grasp, then knocked him down. While he lay momentarily stunned, Ned untied me—that is de Lamiter—leaving me to deal with Conrad while he, Ned, quietly ducked out of the room to follow his own safe course of action. I didn't have time to deal with Ned because by that time, Conrad had come around and there was a big dash for the coagulator. A rough-and-tumble ensued, in which I eventually gained possession of the coagulator, killing Conrad."

Ned's smile was back on his face. " It might work. Later, I suppose you cover up my end until I can get back to Earth . . . But what's this about my being so upset ?"

" Because, Ned, it's not going to happen quite like I told it. Nor am I going to tell it that way. There is one convincing touch missing, the one touch that will swing the whole switch beyond any questioning. That touch is you, Ned. You're going to be lying dead alongside Conrad." With that, Conrad simultaneously pressed the clip on the coagulator.

Ned stiffened and fell to the rug like an overturned statue.

Conrad nudged him once, then rapidly brought a chair and the make-up bag over to the end table next to de Lamiter. He set the tray of empty polish remover bottles on the floor before placing the bag and coagulator on the table. He started to reach into the bag then looked up at de Lamiter with a crooked leer.

" I think we'll kill you right now !" He reached for the coagulator, hesitated. " Don't tell me your heart's on fire." He smiled, peered closer at the smouldering hole in de Lamiter's coat.

It was at that instant, without warning to either of them, that one side of the smouldering ring burned into the acetone-colloid stain.

There was a soft roar, like a bonfire, and a curtain of flame shot up between the two men. De Lamiter screamed as the flame hit his face. There was a hoarse yell from Conrad. Then it was over. Only the smoking remnants of charred clothing remained.

De Lamiter, his arms no longer held to the chair by his coat, toppled over against the side table, knocking it to the floor. The chair tipped and went over after it. De Lamiter hit the end table on his neck—and lay half-stunned a moment in a world black with pain. Both his

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eyes were glued shut. Almost screaming, he spread one open with two fingers. His chest was bare, tiny blisters covering it. What was left of his pants were down around his knees. His ankles were still buckled to the chair. Burning with pain, he took the two front legs of the chair and tore them apart. Then, only half-conscious, he crawled away . . .

Somewhere near, someone else was coughing and moaning. Vaguely de Lamiter remembered Conrad. With his watering pain-stabbed eye, he tried to look up. His vision swam blindly around the room. A wavering outline of Conrad crawling on all fours, came slowly into focus. He still had his clothes, but his hair was gone and his face was charred and blackened. His eyes were raw slits which flickered and pulsed, as he patted and searched the floor before taking each crawl.

De Lamiter suddenly remembered the coagulator. With an agony of slowness, he half-dragged, half-pushed himself across the floor. Pain seemed to twist and turn his sense of direction. One minute Conrad was in front of him, the next, behind him or way off to one side. Once they bumped head-on into each other, but agony drove them apart again.

Somewhere in the room was a shining metal tube. The thought went flying around and around in his head on wings of pain. Somewhere . . . somewhere . . .

His body brushed Conrad's, sheered off, then brushed him again. Something clicked and rolled softly across the carpet. Conrad suddenly let out a grunt and pulled himself, as fast as he could, after it.

De Lamiter hesitated, trying to get his single dripping eye into focus. Conrad seemed to be swimming across the floor. De Lamiter blinked the water away. For a moment, before his vision closed in, he saw a shining object lying directly in Conrad's path. Half blind, de Lamiter crawled after Conrad.

There was a soft exhaling of breath somewhere up ahead. De Lamiter knew Conrad had found it. Biting his lips to keep from groaning, he somehow staggered to his feet. He blinked his eye, but it wouldn't clear. In front of him was nothing but wavery, distorted colours all running together. He kept stumbling on, until he tripped over Conrad. He cried out as his blistered hand hit the floor, then he heard Conrad cursing on the other side of him.

The jar had knocked the water from his eye and he looked up to see Conrad with the coagulator, spraying a portion of floor just beyond where he had fallen. De Lamiter lay rigid, holding his breath. His heart was pounding so loudly he was afraid Conrad would hear it.

Conrad slowly crawled toward him, continuing to spray the space on the other side of where he lay. When the coagulator was almost

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over him, de Lamiter reached up one pain-filled arm and grabbed at it. And missed, Conrad, just then, had moved it away to the far end of his spraying arc.

De Lamiter caught it on the swing back, just as Conrad put his hand down on de Lamiter's thigh. With a snarl, Conrad tried to jerk the coagulator down to de Lamiter—but only his empty hand rushed down. De Lamiter had wrenched the tube away an instant before his jerk. De Lamiter groaned with agony as Conrad with both fists clawed and slugged his body. He was smothering under blankets of flame . . . Then he had the coagulator twisted around, his finger pressing the clip.

Conrad stiffened across his body.

Somewhere far off in the distance, de Lamiter heard fire sirens and clanging bells. And then he heard no more.

He stood there a moment—startled to find himself back in the room of sea-green depths. Somehow he hadn't thought it would ever again look the same. But it did. He hadn't thought she would look the same, either. But she also did.

He stepped smoothly into the room, still conscious of the Moon's gentle gravity. He caught a reflection of himself as he passed the wall mirror, his head swathed under a maharajah's turban of bandages and his face plastered with double-crosses of patching plastic. He tried to grin jauntily as he stopped before her, next to the blue Lunar window, but the plastic held the smile down into a grimace. She smiled, inspecting him with eyes as deep and blue as an evening sky. "I was hoping to see what you really looked like again," she said, "but not much seems to be visible."

He again tried to smile, but the tape stopped him. She laughed and turned away to sit down on the sofa.

"Tell me," he asked, "what did you suddenly think, to put Conrad into such high gear?"

"I grasped what you must have meant about being able to prove who you were."

"And you tried me for an encephalograph reading while I was in the hospital?"

"Yes." There was a touch of humour in her voice. "Don't worry, you're you."

He sighed. Everything was settled and safe. The adventures were all over. He could go back to Earth now, to pick up the missing threads of his strange past and try to live a normal life.

"I suppose you know what they told me at the hospital," he said. "There will be no danger—ever—from me. I'm told Ned did a good

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job on me. Everything's probably gone for good, past memory and all." He gazed out across the blue aridness of the *Mare Nubium*. It looked as desolate as he suddenly felt.

" Did you know, I'm leaving to-day ?" said her warm voice. " My term with Unesco has run out, and my successor is arriving to take over." After a moment something made him turn. She was looking thoughtfully at her painted nails. " Are you sure your, ah—telepathic powers won't come back ?"

He looked at her without answering. Then, as he realised what she meant, everything changed. " No," he laughed. " On second thought, I'm not at all sure. My telepathic powers might easily come back—and I might suddenly want to conquer the world !"

They both laughed.

" You need someone to watch you," she finally said.

" I need someone to watch me," he agreed. " I'll need someone to watch me at all times."

She stood up, her lips parted and her eyes shining.

" Someone responsible, like an ex-director of Unesco," he added, stepping forward.

She was in his arms. " To kill you of course," she smiled. " But how ?"

" Watch me closely," he whispered as their lips met.

Charles Dye.

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The versatility of the British doyen of science fiction, Arthur C. Clarke, is readily apparent with the two recent additions to the impressive list of books already to his credit. Mr. Clarke has striven mightily in the cause of his own crusade—the popularising of the possibilities of space flight and its practical achievement—and has established his claim to authority with his technical *Interplanetary Flight* and *Exploration of Space.* Cannily he has succeeded in wringing yet another potential best-seller from this limited field of writing by condensing in eminently presentable fashion the possible future of astronautics from the present launchings of the first unmanned rockets into the stratosphere and above, to the establishment of a lunar colony. In **Exploration of the Moon** (Frederick Muller 18/-), he is expertly aided by the art of R. A. Smith, whose beautiful forty-five full-plate illustrations (of which eight are in colour) match the mood of the book perfectly. The resultant combination is a handsome volume of distinction, and the lucid text is made intensely interesting to laymen like myself by virtue of Clarke's undeniable mastery of the deceptively simple style of good writing.

Vis-a-vis this talent for sugar-coating the cold mechanics of blasting rockets is a creative flair for science fiction equalled by few. Arthur Clarke's first collection of stories, **Expedition to Earth** (Sidgwick & Jackson 8/6), contains possibly the cream of his short story output over the past eight years. Here is a wide variety of themes, ranging far into the past and the future of our own Earth and on into the mysteries of the universe. "Breaking Strain" and "Superiority" are good examples of realistic space adventure, whilst unclassifiable prose pictures like "Second Dawn," "If I Forget Thee, O Earth" and "The Sentinel" have a true feeling for the mystic of science-fantasy. All eleven stories are graced with the imaginative strength, humour and intelligent thoughtfulness we have come to associate with this fine author, whose stimulating ideas and polished style cut brightly through the decaying growth of hackneyed science fiction.

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The study of child psychology probably holds a fascination for nobody but child psychologists and those meditative modern parents whose speculations on their own children are mostly tinged with wonder and dismay. Nevertheless, this subject, suitably science fictionalised by having atomic-bomb radiations the cause of mutant child geniuses, is the basis of an absorbing new novel, **Children of the Atom** by Wilmar H. Shiras (Boardman 9/6). As one who has fortunately never been in the vicinity of such diabolical scientific tinkerings, I was able to shoo my own annoyingly normal offspring to bed and enjoy with detachment this pleasantly different treatment of gene-mutancy effects on the human brain potential. Marred by a tendency to periphrasis, (I suspect the author to be a successful child psychologist of the female variety), this book includes the two highly praised novelettes from *Astounding Science Fiction*; "In Hiding" and "Opening Doors." The rest of the book gives the impression of uncertain padding-out to full book length. However, I do admire the unmelodramatic way in which Dr. Shiras unfolds the gradual discovery of the dispersed talented children—all seed of parents connected with the atomic explosion years before— the revelation of their hidden activities, and subsequent realisation, under the initial supervision of a few enlightened adults, of their potential for assisting the future of mankind.

Jonathan Burke's **Pattern of Shadows** (Museum Press 7/6) is a most disappointing waste of this author's talents. The setting is the future when the nearer planets are colonised and space travel is commonplace; a disturbing sociological feature is an underground faction of supernormal telepaths hounded by the dictator of the Interplanetary Federation. The story is told by a young spaceman, suffering from amnesia following a space battle near Saturn, and whose new artificially included memories are strangely false. Starting on a lonely farm on Mars, he discovers that his 'parents' are not his real family, and from then on he is rapidly caught up in the intrigues on Earth between the telepaths and the secret police of the Federation, in an attempt to learn his real identity. This is fairly obvious to the reader early on in the unconvincing proceedings, and all efforts to make the ending even slightly exciting (and surely this unpretentious offering had no higher objective?) seemed to me to fail miserably.

A new science-fiction novel by Isaac Asimov is a rare treat, and **The Caves of Steel** (Boardman 9/6) starts off in fine style—the setting, characters and influences deftly pointed to so that you can sit back and enjoy this science-detective mystery. The 'caves' are the huge self-contained cities in which the teeming millions of the future lead shel-

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tered but dreary regimented lives, rarely seeing the sun or the stars or the wastelands beyond the steel walls. Men fear the infiltration of robots into their lives, robots made by their masters, the 'Spacers,' for Earth is now the misfit of fifty civilised planets, and the Spacers, descendants of the early space colonists, have evolved a luxury, disease-proof and robot-serviced paradise on their thinly populated planets. They have little contact with Earthmen, in the Spacetown stronghold on Earth from which they maintain their benevolent subjugation. So that when a Spacer is murdered in peculiar circumstances, it means a hot case for somebody. In this instance, Lije Bailey, rated C-5 in the scheme of living, who is assigned the problem, with the assistance of a most efficient Spacer humanoid robot by the name of R. Daneel Olivaw. The subtle motives of the Spacers and the hopes and fears of the 'Medievalist' malcontents in the huge 'Caves,' are revealed during the exciting investigation, in which Lije himself becomes chief suspect. Here is fast action and fascinating science fiction by a master of the art, yet it is something more. The satirical picture of the ultimate in metropolitan nightmares is rather frightening, and existence in the 'Caves' is as bad in its way as Orwell's "1984," yet Asimov's solution to the problem sounds a hopeful note.

Here's good news for lovers of space-opera. The whole of the famous Lensman series by E. E. Smith is scheduled for British publication and the first of the six books is now available—**Triplanetary** (Boardman 9/6). 'Doc' Smith won his permanent niche in the science fiction hall of fame with ten novels (his few short stories are negligible) which had an interesting publishing history. In 1928 his *Skylark of Space* was immediately acclaimed by the readers of *Amazing Stories* in which it was serialised, despite its not surprising rejection by almost every other American magazine. The daring scope of its space adventure contrasted favourably with the earlier staid reprints of Wells and Verne, and the awe with which I read it at a tender age was not diminished by its 1930 sequel *Skylark Three*. An unconnected, and somewhat disappointing, serial, *Spacehounds of IPC* appeared in 1931, and in the following doldrum years Smith's fame languished. Then early in 1934 *Amazing* began *Triplanetary*, a romance of galactic warfare in which he developed the idea of faster-than-light travel to enable his protagonists to wage their colossal battles further afield. Later in the same year the incredible climax to the Skylark stories, *Skylark of Valeron* appeared in the revamped *Astounding* where its hyper-pseudo-science suited the current thought-variant trend. It had obviously been too much for the reactionary editor of *Amazing*, and was almost too much for even the Smith fans who must have found it difficult to swallow the geometric progression of bigger spaceships and evil

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adversaries, let alone the nauseatingly coy dialogue perpetrated by his characters. Nothing more appeared until 1937 when *Galactic Patrol* ostensibly began the Lensman series which ran at intervals in *Astounding* for the next ten years, and it became obvious that Smith had planned in that interim period a cosmic history based on his pet theme of the struggle between good and evil—an exciting and well-planned science fiction adventure culminating in *Children of the Lens* in 1947. Following this came the reprinting of his novels in book form by the American *Fantasy Press*, and the original *Triplanetary* became the actual beginning of the Lensman saga by the addition of considerable new material introducing the basic Arisian-Eddorian conflict, and plot interjections to blend the story into the epic theme. So, in this present volume (handsomely produced with original illustrations) the reader is taken from the remote past of galactic history when the benign Arisians initiated their Plan to defeat the evil other-galaxy Eddorians—through incidents on the local testing ground of Earth, including the atomic destruction of Atlantis, the decadence of the Roman Empire, the First and Second World Wars, and a future atom war. After the latter it takes the remnants of civilization centuries to reach a peak of scientific progress whereby the advent of a three-planet organization confronted with piratical forays engineered by an Eddorian-sponsored arch-criminal and an invasion by amphibious creatures from another star system, can provide the material for the last two-thirds of the book. It is somewhat plotless, and suffers from the trite romantic element in the persons of Triplanetary agent Steve Costigan and his well-chaperoned Clio. It may prove unreadable to many modern science fiction readers, and will baffle the uninitiated, but will be hailed by the space-opera fans to whom it is a foretaste of the thrills to come.

Messrs. Boardman are forging rapidly into the lead in science fiction publishing with their admirable and varied list. The other two new books this month include Fletcher Pratt's **Double In Space** (also 9/6) a two-in-one space adventure which curiously is not a replica of the American edition of the same title. Here the story "Project Excelsior" is coupled with "The Condition Captain" which was published separately in America under its original title of "The Undying Fire." This tells of a space pilot's efforts to reinstate himself after being framed by a sinister organisation (the Russian bogey again) which is trying to gain dictatorship of the colonised planets. Captain Paullson is a key man in a space service in which psychological conditioning is a recognised procedure, and by getting him dismissed from the service, the way is open for nefarious intrigues. He wins out in the end of course, after facing space pirates and other moral and

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physical dangers on exotic planets, but this is space opera of reasonable quality which can be thoroughly enjoyed with little cerebral exercise. "Project Excelsior" is rather a make-weight affair dealing with the familiar problems encountered in a situation where two opposing space-satellites, one American the other Russian, come into conflict.

The other title, **Conan The Conqueror** by the late Robert E. Howard (Boardman 9/6), is strictly fantasy fiction. Howard's many exotic stories of an imaginary ancient world were first met with in the pages of *Weird Tales*, and of all his swashbuckling heroes who met magic with swordplay in the fearsome barbaric lands of the carefully plotted Hyborean Age, the mighty Cimmerian, King Conan, emerged as the most vivid character. This epic of legendary history will be completed in five volumes, and although this present novel is fourth in chronological order, it serves admirably as an introduction to the new reader of Conan. Briefly, it tells of Conan's overthrow from the throne of Aquilonia by the sorcery of Xaltotun, a high priest of black magic who is resurrected from a three-thousand year death by the power of a magical jewel, the Heart of Ahriman. But Conan, in typical Tarzan style, escapes from his triumphant enemies with the aid of a beautiful slave girl, defeats pirates, ghouls and worse creatures alike, by his indomitable strength and mighty sword arm and recaptures the jewel after many adventures in strange lands. With its help he wins the final clashing battle, Xaltotun is cast back into the hell which spawned him, and Conan regains the throne of Aquilonia—until the next adventure. Shrugging aside the naivete of the whole thing, it is possible to enjoy these tales of fantastic adventure, because Howard

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though lacking in literary style, was first and foremost a story-teller, and if the hero's regular miraculous escapes from death tend to become a little monotonous, even this must be excused, because Conan is the larger-than-life, personal-projection type of hero who lives forever in the imagination.

Radio serials tend to have less impact on the listener than a play complete in one hearing, and for an unashamedly science-fiction serial to catch on with the general public and sustain an unprecendentedly huge listening figure for twenty weeks, was a phenomenon which must have shaken the B.B.C. considerably, delighted the minority of enthusiasts, and was probably more responsible for the increasing public interest in science fiction than any other factor. Such a radio presentation was last year's *Journey Into Space* written by radio producer and amateur astronomer Charles Chilton. Formerly noted for his popular *Riders of the Range* series, Chilton slid easily onto his new literary saddle. Of course, the desirability of such interest in this type of production, and its effect on the growth of better literary science-fiction, is debatable, but in response presumably, to public request, Chilton has written further adventures of Jet Morgan and his crew in *The Red Planet* currently being aired.

The uncertain development of this present serial may have blunted to some extent the appreciation of its smoother and more exciting predecessor, and the timely publication in novel form of **Journey Into Space** (Herbert Jenkins 9/6) is welcome. Allowing for its original medium and the intended audience it is a pleasure to concede that the author rose successfully above the mawkish sentiment and ingenuousness of the comic-strip level, and brought to life realistically the admittedly fantastic adventures which befell the first manned rocket flight to the Moon. One is inclined to believe the rumour that Chilton had to write on frantically to lengthen the original six-episode version the B.B.C. had planned, in order to take advantage of its sudden popularity, but the later incidents of the aliens on the Moon and the time-travel kidnap are neatly tied on. The loss of the original and admirable sound effects is made up in the book by an easy narrative style and an effective first chapter gimmick.

Heading the three new anthologies is **The Second Astounding Science Fiction Anthology** edited by John W. Campbell, Jr. (Grayson & Grayson 9/6). My remarks anent the earlier selection of the best shorter stories from *Astounding* apply equally well here, and I am pleased to see my personal favourite, T. L. Sherred's " E for Effort," once again in print. This taut, well-written story of an invention which exposes our warmongers had probably the greatest emotional

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impact of any in the past two decades. Kris Neville's " Cold War " in an unpretentious piece about the perils of one nation owning a space-station which can deal ruthless atomic retaliation to its enemies. In " Vault of the Beast " A. E. van Vogt combines his gift for exciting story-telling with some incomprehensible pseudo-maths which for me failed to create that necessary suspension of disbelief conducive to enjoyment of science fiction. On the other hand Murray Leinster's " Historical Note " didn't have to, and by poking fun at the Russian monopoly of scientific discovery (an American-sponsored tendency, I suspect) produces a genuinely funny story with a tantalising idea. Pass the sodium chloride, please !

The next quarter of the book is occupied by " Clash By Night " by Lawrence O'Donnell (Henry Kuttner), sixty pages of Kiplingesque about the fighting mercenaries of the undersea keeps of Venus (a neat

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variation of the cowboys-into-spacemen adaptation) and quite frankly I enjoyed a score-fold more the three page " Meyhem in Ce Klasrum " by Dolton Edwards, a fascinatingly funny extension of simplified spelling. Eric Frank Russell in " Late Night Final " lays on the satire rather too heavily, but manages to salvage a modicum of appeal in this story of a military invasion fleet defeated on a new planet by a way of living. H. B. Fyfe is the final contributor with " Protected Species " wherein a colonial inspector of Earth's expansion into space learns some disquieting information. I hope the Third Anthology will be published later this year.

Samuel Mines' **Startling Stories** (Cassell 12/6), by having the title shortened from the original American *Best from Startling Stories*, easily avoids the immediate criticism that this selection is neither the best nor were all the stories from *Startling Stories*. Nevertheless the average quality of this handsomely produced anthology is good, setting the tenor with Theodore Sturgeon's cracking science thriller " The Wages of Synergy," slipping a little with " The Perfect Gentlemen " a satire by R. J. McGregor (or if you like, J. T. McIntosh the satyr of science fiction), and steadying with Joel Townsley Rogers' " Moment Without Time " about a Russian scientist who accomplished much in the delayed instant before his execution. " The Naming of Names " is a distinctive and distinguished Bradbury, whilst Sherwood Springer's excellent " No Land of Nod " faces up to the atomic-aftermath Adam-and-Eve problem with commendable maturity. Jack Lewis has a delightful leg-pull in " Who's Cribbing," and Arthur C. Clarke writes a typically competent space adventure with philosophic overtones. Jack Vance provides an unexpectedly descriptive fantasy in " Noise," and Edmond Hamilton a most realistic and sensitive story of a home-coming space hero. The ubiquitous A. E. van Vogt tells of an aeons-old robot atom bomb, a relic of a forgotten galactic war, which is activated by modern man, in " Dormant." The collection ends with a rather complicated and ineffectual concoction concerning the problems arising from a matter-transmitter mode of interplanetary travel, called "Dark Nuptial" by Robert Donald Locke.

The third new anthology is **Worlds Of To-morrow,** edited by August Derleth (Weidenfeld & Nicholson 9/6). The Derleth hall-mark ensures quality and here, indeed, are fifteen often brilliant off-trail science fiction stories by top-line authors. Following Ray Bradbury's bitter-sweet vignette, " The Smile," we have two Arthur Clarke gems, the ironic " The Fires Within " and " Superiority " (although rather an unfortunate choice this latter, appearing in two collections together in one month). Then Derleth's own " McIlvaine's Star " which is perhaps the weakest story in the book; more irony in Paul

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Fairman's " Brothers Beyond the Void " and an echo of Earth's glory in the remote future in dependable Edmond Hamilton's " The Dead Planet." Theodore Sturgeon's " The Martian and the Moron " has its moments, and Donald Wandrei's " Strange Harvest " carries the theory of planet intelligence to its logical and humourous conclusion. William Tenn's tongue-in-cheek " Null-P," and Henry Kuttner's " Line to Tomorrow " help to balance the morbid horror of H. P. Lovecraft's " From Beyond." The four A stories I select are Fritz Leiber's " The Enchanted Forest," Margaret St. Clair's grisly " The Gardener," H. B. Hickey's " Like a Bird, Like a Fish," and F. B. Long's " The Great Cold," because of their new and fresh treatment of traditional themes. Altogether a satisfying collection worthy of addition to your library.

A new novel by Margot Bennett entitled **The Long Way Back** (The Bodley Head 10/6) has been selected as a *Sunday Chronicle* Book Choice, and although not presented as science-fiction, turns out to be a very fine fantastic adventure, and something more. Well-written, with deft touches of humour, the story starts with Grame, a citizen of a black-skinned civilization situated in South Africa, some centuries after atomic war has devastated Europe, yellow men live in America and the rest of the world has been practically destroyed. A beautiful piece of irony this, with the dwindling Boer descendants maintained in a preservation, objects of interest to anthropologists. In a kind of bene-

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volent " 1984 " the citizens are graded for their life tasks by an omnipotent Machine, and Grame, a mechanical-repetitive worker is dissatisfied with his lot, despite state-provided food, religion and sex for all. His hobby is cosmic rays, but in familiar practice, he finds himself assigned to an anthropological expedition to Britain, where according to legend white men still survived. It is thought that the Britons never got very far, and ended up with the Big Bang; but there are reports of a Golden City where valuable green glass could be found (atomised remains of London ?) and a race of savages who worshipped the god Thay (somewhat obscure this). The chapter where Grame learns some ' primitive history ' is a real joy, and the preparations for the expedition, to be led by Valya, a young but wilful scientist of the dedicated spinster class, are wonderfully described.

The small party flies to Britain, and from then on the tempo of the story changes and becomes full of lusty, exciting adventure wherein the explorers are attacked by mutant dogs, brave fearsome rigours in the forest-covered land, contact the tribe of savages and meet the intelligent chief, Brown. A finely drawn character this, as are those of the surviving members of the part, Grame, Valya and Hep. A very unconventional novel, with observant and pithy commentaries on mores and customs of our civilization. Strongly recommended.

On the non-fiction shelf we have **Suns, Myths and Men** by Patrick Moore (Frederick Muller 12/6), an enjoyable and instructive book for the general reader, covering the whole field of astronomy and the effects of heavenly bodies (strictly cosmological) upon man since the dawn of history, from ancient myths to present day scientific appreciation of the wonders of the universe. The discovery of the planets, the possibility of life on other worlds, extra-terrestrial visitors and interplanetary travel, all come in for some popular treatment. Within its scope—and actually the book merely rehashes familiar material from scattered sources—Mr. Moore succeeds admirably, and I must admit that I found it more interesting than many a so-called work of fiction offered to the public.

Last on the list is by all means the least. Presented as non-fiction, nevertheless the ' facts ' of **Flying Saucer From Mars** by Cedric Allingham (Frederick Muller 10 6) will bear as much (or rather as little) scrutiny as its similar notorious predecessor, " Flying Saucers Have Landed." One must allow the sincerity of the author's own convictions (or self-delusions, as the case may be), but the attack on Arthur C. Clarke's defence of his attitude towards flying saucers is most pointless, and Allingham's account of his meeting with the Martian in the wilds of Scotland is extremely unconvincing. At least the change

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of locale and home planet of the extra-terrestrial visitor is welcome, but the photograph of the Martian—really the crucial evidence, which if genuine would have been of shattering importance—fails completely in its effect. Such a pity the Martian had his back turned and was slightly out of focus, and that the Saucer was just out of the picture to the left ! And surely the photograph of the Saucer facing page 97 shows distinctly a suspicious looking suspension cord atop the machine? Perhaps I am wrong but alas, I remain unimpressed, an infidel unbeliever still waiting for proof.

Leslie Flood

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Survey

Everyone connected with science fiction—editors, publishers, authors, advertisers, wholesalers and retailers—want to know "*What type of people read science fiction?*" Up to now there hasn't been a nation-wide survey aimed directly at the readers, so for our own information and the improvement of this magazine we are introducing one herewith.

We would more than appreciate your co-operation on the following information, which will be tabulated and the results broken down statistically and published in this magazine shortly. Owing to the time-lag on overseas distribution we will publish the British statistics first and then later the breakdown of our overseas readership. Your name and address is not necessary unless you wish to include it, but we would appreciate your city or town.

Age..... Male or Female..... Married..... City.....

Education.....

(*State if still attending school or college*)

Present employment .....

If technical, which branch.....

Degrees (if any) .....

Approximate yearly salary .....

(*Under* £250; £250-£500; £500-£750; £750-£1000; *over*)

Hobbies .....

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Novelettes..... Short stories..... Articles..... Book Reviews..... Postmortem.....

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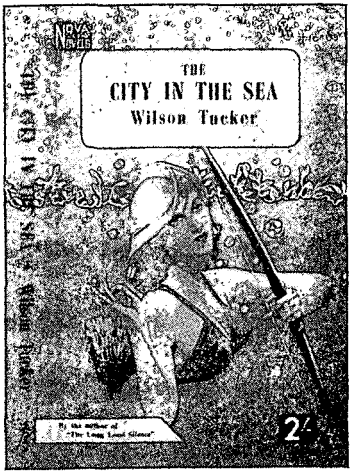

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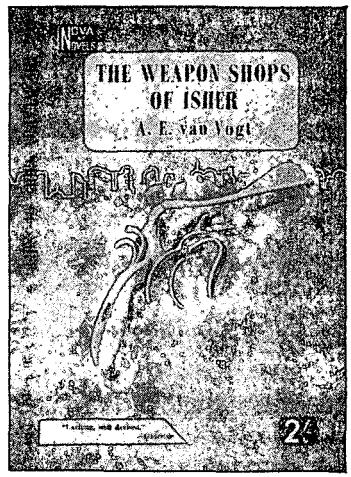

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